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THE

REGISTRAR-GENERAL'S

STATISTICAL REVIEW

OF

ENGLAND AND WALES,

FOR THE YEAR

1928.

(New Annual Series, No. 8)

TEXT.

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CORRIGENDA.

YEARS 1922, 1923, 1924, 1925, and 1926.

TABLES : PART I.—MEDICAL.

Table 22. The heading "Accident" should read "Accident (includes Open Verdicts)."

STATISTICAL REVIEW, 1928.

Note—Of the tables referred to below, those numbered in Arabic will be found in "Tables, Part I—Medical," and those lettered in "Tables, Part II—Civil," while those numbered in Roman numerals appear in the text of this volume.

DEATHS.

The deaths of 460,389 persons were registered in England and Wales during 1928, 235,542 of these being males and 224,847 females.

This number exceeds the returns for three recent years only, 1921, 1923, and 1926, prior to which so low a figure had not been returned since 1862, when the resulting death-rate was more than double that for 1928.

Deaths of civilians, including all deaths of females and 99·82 per cent. of those of males, are referred in tabulation to their administrative area of residence, and therefore figure in all tables relating to portions of the country. It has been found, however, that similar treatment cannot be satisfactorily applied to the deaths of non-civilians, which are therefore excluded from all tables relating to local areas. Table 17, accordingly, so far as it refers to England and Wales as a whole, includes all deaths registered, but when referring to the population as subdivided by class of area includes only deaths of civilians; and the same restriction to civilian mortality only applies to all tables embodying distinction of local area.

Death-Rate.—The 460,389 deaths correspond to a rate of 11·7 per 1,000 of the estimated population. When standardized* to correct for the deviation of the sex and age distribution of the population, as shown in Table LXXXIV, from that of the standard population of 1901, this death-rate is reduced to 9·9.

As the population of this country in 1901 included relatively few infants and old people it forms a standard exceptionally favourable to low mortality. Its use for this purpose accordingly yields comparatively low standardized rates all round. In order

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* The term "standardized death-rate" means the death-rate corrected for differences of sex and age constitution of the population. For a description of the direct method employed for this "standardization" *see* the Annual Report for 1911 (pages xxvii-xxxi). Standardized death-rates for the sexes separately quoted in this Review are based upon the age distribution of persons of undistinguished sex in the general population of England and Wales in 1901. (*See* Annual Report for 1913, page xx.)

to correct any wrong impression which might arise from this fact, and to provide standardized rates for this country comparable with those of countries using the standard recommended by the International Statistical Institute (a composite population made up of those of a large number of European countries in 1900 or 1901), rates calculated upon the latter by the method suggested by the Institute* are shown in Table XVIII, as well as those based on the 1901 English standard, which is that always used elsewhere in this Review. It will be seen that use of the less favourable standard increased the rate from 9·9 to 11·1 per thousand.

The rate of 9·9 per 1,000 is seen from Table 1 (Part 1) to be the lowest ever recorded in this country, 10·1 in 1926 coming next. Never before has our death-rate been less than one per cent. of the population, and if the standard did not represent population conditions much more favourable than those of the present day to low mortality the crude rate of 11·7 shows by its excess of no less than 18 per cent. over the standardized that no such figure would have been attained even now. Table 1, indeed, shows lower crude rates (11·6 for both 1923 and 1926) than for 1928. But the increase of the crude rate in two years from 11·6 to 11·7, while mortality, as represented by the standardized rate, has fallen from 10·1 to 9·9, shows how misleading an index of mortality the crude death-rate has now become, owing to the rapid ageing of the population. This matter was discussed in some detail in the Review for 1927, and the changes now recorded for 1928 substantially represent continuation during the subsequent year of the movements represented in Diagrams 1 and 2 of that Review as having been in progress in 1927.

Mortality of different portions of the year.—Table 2 shows that the lowness of mortality in 1928 was due to the consistent manner in which a comparatively favourable experience was maintained throughout the year, although lower crude rates are on recent record for each quarter than those of 1928. But all the quarterly rates were low, and the combination of four low rates, even though none of them was outstandingly so, has yielded the lowest annual rate in our experience.

Mortality of each sex.—Table 3 shows similar consistency in the reduction of mortality as distributed by sex in 1928 to that shown in Table 2 for its distribution by season. For each sex the rate at all ages was the lowest yet recorded, that for 1926 coming next in each case. But it also shows the fall, over an extended period of survey, to be greater for females throughout the whole of life. This change is recorded in Table I, derived from Table 3, with substitution for 1911–15 and 1916–20 of rates based on total male population and deaths registered in this country for those in Table 3, which deal with civilian males only.

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* Annuaire International de Statistique, 1916, p. viii.

Table I.—England and Wales.—Mortality of Males per cent. of that of Females at Various Ages from 1841–45 onwards. (*See* **Table 3**).

	All Ages Standardized.	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75–	85–
1841–45	109	117	102	92	88	105	95	101	114	111	111	109	106
1846–50	108	116	103	95	91	104	94	99	113	112	111	109	107
1851–55	110	116	104	98	90	103	97	102	118	114	112	110	106
1856–60	109	115	99	96	90	102	96	103	118	115	111	108	107
1861–65	111	115	102	98	93	105	100	109	122	118	112	109	110
1866–70	113	115	107	100	94	106	105	113	124	120	115	109	111
1871–75	115	117	108	100	97	109	109	119	128	121	114	111	110
1876–80	116	118	107	97	96	108	109	119	129	122	114	112	111
1881–85	115	118	102	97	96	102	104	117	127	122	116	113	112
1886–90	116	119	100	97	98	106	107	117	129	122	117	112	114
1891–95	116	119	98	96	100	108	108	118	128	121	115	111	110
1896–00	118	118	98	96	106	120	116	122	129	124	117	113	109
1901–05	119	119	97	95	107	119	118	121	130	128	119	115	110
1906–10	120	119	97	95	107	121	118	121	129	128	121	115	113
1911–15	122	120	100	95	111	122	124	126	132	133	124	118	115
1916–20	124	121	100	92	114	122	124	131	135	137	132	121	111
1921–25	122	124	104	100	100	113	114	130	132	133	127	119	110
1921 ..	122	125	104	100	104	113	114	125	130	134	128	118	113
1922 ..	122	123	104	94	104	116	113	130	129	132	126	119	108
1923 ..	123	124	105	100	104	113	118	131	132	132	127	120	113
1924 ..	122	122	109	94	100	110	111	130	134	132	127	119	109
1925 ..	123	124	104	100	104	106	115	131	135	135	129	121	108
1926 ..	124	124	109	100	104	107	112	133	135	134	129	123	111
1927 ..	124	125	109	107	104	110	112	135	137	134	129	120	108
1928 ..	125	126	109	113	108	103	112	130	138	136	130	123	110

The excess of male mortality, 25 per cent., in 1928, has grown very steadily from less than 10 per cent. in the middle of last century. It was increased during the war by deaths of combatants occurring in this country, but even the 24 per cent. excess of 1916–20 is now (for the first time) exceeded. At all ages under 15 the male excess for 1928 is the highest recorded in the table, as also at 45–55 and 75–85. The period of male advantage at 5–15 in the later years of last century seems to have definitely disappeared, the rate being, for the first time, substantially higher for males at every age in 1928, though indeed it was actually higher in some degree at every age in each of the three previous years also. The causes of this large male excess are set forth in Table II, in anticipation of the discussion of causes of death on pp. 38–119.

In Table II the disadvantage in respect of mortality to which females are subject owing to their greater mean age is neutralized by standardization, in order to secure fair comparison between the sexes. The effect may be seen by comparison with Table 5, in which the crude rates are stated for all causes of any numerical significance distinguished in tabulation. In that table the rate for cancer, for instance, is returned as higher for females, whereas Table II shows it to be really somewhat (3 per cent.) higher for males, though the total cancer rates of 1,031 and 1,001 per million for males and females are very differently distributed as between the sex organs, which yield great excess for females, and other parts of the body.

Table II. —Analysis by Causes of Death of the Excess of Male over Female Mortality in 1928.

	Standardized Mortality per Million Living.				
	Males.	Females.	Males Excess.	Percentage of total Males Excess.	Males rate per 1,000 Females rate.
Respiratory tuberculosis.	803	625	178	8·1	1,285
Other tuberculosis ..	212	187	25	1·1	1,134
Cancer, other than of breast and genitals.	960	599	361	16·4	1,603
General paralysis of the insane.	49	10	39	1·8	4,900
Heart disease ..	1,474	1,348	126	5·7	1,093
Arterio-sclerosis ..	581	352	229	10·4	1,651
Bronchitis	548	412	136	6·2	1,330
Pneumonia, all forms	974	652	322	14·6	1,494
Other respiratory disease.	127	88	39	1·8	1,443
Peptic ulcer (gastric and duodenal).	120	35	85	3·8	3,429
Diarrhœa and enteritis	235	183	52	2·4	1,284
Cirrhosis of liver ..	47	23	24	1·1	2,043
Nephritis, acute and chronic.	315	257	58	2·6	1,226
Other diseases of the genito - urinary system.	213	78	135	6·1	2,731
Congenital malformations.	145	117	28	1·3	1,239
Congenital debility and sclerema.	112	71	41	1·9	1,577
Premature birth ..	470	365	105	4·7	1,288
Other diseases of early infancy.	135	99	36	1·6	1,364
Suicide	147	57	90	4·1	2,579
Accident (violence, other than suicide and homicide)	567	220	347	15·7	2,577
Total of above ..	8,234	5,778	2,456	111·4	1,425
Cancer of the breast and genitals.	71	402	—331	—15·0	177
Diabetes	91	101	— 10	—0·5	901
Pernicious anæmia	30	39	— 9	—0·4	769
Diseases of the thyroid	8	48	— 40	—1·8	167
Gall-stones ..	13	29	— 16	—0·7	448
The puerperal state	—	140	—140	—6·4	—
Other causes ..	2,657	2,363	294	13·4	1,124
All causes	11,104	8,900	2,204	100·0	1,248

The table shows large excess of mortality for males from most of the important causes of death, amounting, for the first twenty causes listed, to 42½ per cent. This is partially offset by excess for females from the last six causes distinguished, including the risk of childbirth peculiar to them. The aggregate of these female excesses (tabulated as negative male excess) amounts to 546 per million, deduction of which from the corresponding figures for male excess of 2,456 for distinguished and 294 for undistinguished causes reduces the male excess for all causes to 2,204 per million population, or 24·8 per cent. of the total rate for females.

The causes chiefly accounting for male excess are seen to be, in order of importance, cancer of organs other than those of reproductive function, accident (violence other than suicide and homicide), pneumonia, arterio-sclerosis, and tuberculosis. Their proportionate excess from tuberculosis is the same as that from all causes, 25 per cent. It is rather higher from phthisis, and much lower from other forms of the disease. Some forms of mortality other than those associated with maternity are seen to be very largely restricted to one or other sex—general paralysis of the insane, peptic ulcer, and (somewhat surprisingly in view of the importance of gynæcology as a branch of medicine) genito-urinary disease other than nephritis, as well as suicide and accident, to males ; and cancer of the reproductive organs, diseases of the thyroid, and, to a less extent, gall-stones, to females.

Infant Mortality.

Of the 460,389 deaths registered during the year, 42,960, or 9·3 per cent., were those of infants under one year of age. This proportion has fallen greatly of late years, owing mainly to reduction of the birth-rate. So recently as 1901–10 it was 22·6 per cent.

The rate of infant mortality resulting from these deaths is 65 per 1,000 live births, the lowest yet recorded in this country. As the lowest rate for any previous year was 69 in 1923 the reduction which has been going on since the commencement of the century made substantial progress in 1928, the rate for which is exactly half that of 17 years earlier—1911.

It has been pointed out in previous Reviews that for the years 1915–22 the conventional statement of infant mortality (deaths under one year of age registered in the year per thousand live births registered in the same year) was an unreliable measure of the extent of infantile mortality, owing to violent fluctuations in the birth-rate during, or immediately preceding, those years. In the Report for 1920 a method was described for obtaining a more exact statement of infant mortality by stating the deaths in proportion, not to the births registered in the same year, but to all the infants born alive during the same three monthly periods as

those which died. The results of this correction are applied in Table III (rates in brackets), where it may be seen that since the period of violent fluctuations of the birth-rate came to an end the effect of this revision of the crude rate has been much less. As in 1926 it had become evident that the correction, which was without effect in two of the three preceding years, was no longer required, it was then discontinued ; but it is still necessary to retain the restated rates for earlier years in the table in order to secure any accuracy in statement of the recent history of infant mortality.

Table III.—England and Wales : Infant Mortality, distinguishing Mortality from Diarrhœal Diseases, 1861–1928.

Deaths under 1 year of age per 1,000 Live Births.

Year.	Diarrhœal Diseases.	Other Causes.	All Causes.	Year.	Diarrhœal Diseases.	Other Causes.	All Causes.	Year.	Diarrhœal Diseases.	Other Causes.	All Causes.
1861–65	15	136	151	1911	36 (36)	94 (93)	130 (129)	1921	14 (14)	69 (67)	83 (81)
1866–70	20	137	157	1912	8 (8)	87 (87)	95 (95)	1922	6 (5)	71 (70)	77 (75)
1871–75	19	134	153	1913	19 (19)	89 (90)	108 (109)	1923	7 (7)	62 (62)	69 (69)
1876–80	16	129	145	1914	17 (17)	88 (87)	105 (104)	1924	6 (6)	69 (68)	75 (74)
1881–85	14	125	139	1915	15 (15)	95 (91)	110 (106)	1925	7 (7)	68 (68)	75 (75)
1886–90	17	128	145								
1891–95	20	131	151	1916	11 (10)	80 (81)	91 (91)	1926	8	62	70
1896–00	31	125	156	1917	10 (9)	86 (82)	96 (91)	1927	6	64	70
1901–05	23	115	138	1918	10 (10)	87 (88)	97 (98)	1928	6	59	65
1906–10	18	99	117	1919	9 (9)	80 (84)	89 (93)				
1911–15	19 (19)	91 (90)	110 (109)	1920	8 (9)	72 (76)	80 (85)				
1916–20	9 (9)	81 (82)	90 (91)								
1921–25	8 (8)	68 (67)	76 (75)								

It will be seen from this table that whereas during the last forty years of the nineteenth century infant mortality was about stationary, some fall from other causes being counterbalanced by an increased death-rate from diarrhœa, the experience of the present century has been very different, the rate having been reduced by more than half since its commencement. This fall has been a common experience in Europe and the civilized world generally, being accompanied elsewhere, as here, by a fall in the birth-rate which may go far to account for it.

The rate of fall has been very different at different periods of the first year of life, as shown by Table IV. This table records the mortality per 1,000 live births at each of eleven subdivisions of the first year of life in each year from 1906 onwards, the rates for the years 1911–25 being corrected in the manner above referred to. It shows that infant mortality has never been lower than in 1928 at any of these eleven infantile ages except the first week of life, for which the record of three recent years, 1923, 1925 and 1926, was better than that of 1928. For the second and third months jointly the 1928 rate is the same as that for 1927, but at all ages other than these the rates recorded for 1928 are the lowest hitherto attained in this country. This general reduction is the more remarkable in view of the fact that at all ages between one week and six months the rates for 1927 were the lowest till then recorded.

Immediately after the war, during the four years 1920–23, a notable reduction of mortality occurred, applying to each age in Table IV, but afterwards little further fall occurred till 1928.

Table IV further shows that the fall during the 23 years for which detailed age distinction is now available has been greatest (58 per cent.) at 3–6 months, and least during the first month, and especially the first day, of life, when many non-viable infants must be expected to perish, premature birth being largely responsible for the heavy mortality of the first day.

Table IV.—England and Wales: Age Distribution of Infant Mortality, 1881-1928.

Year.	Days.		Weeks.				Months.					Total under one year.
	0–1	1–7	0–1	1–2	2–3	3–4	Total under four weeks	Four weeks to 3 months	3–6	6–9	9–12	
1881–1885	—	—	—	—	—	—	67		28	44		139
1886–1890	—	—	—	—	—	—	69		30	46		145
1891–1895	—	—	—	—	—	—	74		31	46		151
1896–1900	—	—	—	—	—	—	74		34	48		156
1901–1905	—	—	—	—	—	—	70		28	40		138
1906–1910	11·5	13·0	24·5	5·8	5·7	4·2	40·2	22·8	22·0	17·3	14·8	117·1
1911–1915*	11·4	12·7	24·1	5·7	5·3	3·9	39·0	20·2	19·6	15·9	14·1	108·7
1916–1920*	11·0	12·4	23·4	5·6	4·7	3·4	37·0	16·5	14·6	12·0	10·8	90·9
1921–1925*	10·4	11·3	21·7	5·0	3·9	2·8	33·4	12·8	11·3	9·2	8·3	74·9
1906	11·8	13·2	25·0	6·1	6·2	4·6	41·9	25·7	27·0	20·7	17·2	132·5
1907	11·3	13·1	24·4	6·0	5·9	4·5	40·7	23·3	21·3	17·3	15·1	117·6
1908	11·5	12·8	24·3	5·9	5·8	4·3	40·3	24·2	23·6	17·7	14·6	120·4
1909	11·6	13·2	24·7	5·7	5·3	4·0	39·8	20·4	19·2	15·6	13·8	108·7
1910	11·5	12·5	24·1	5·4	5·1	3·8	38·5	20·0	18·8	15·0	13·2	105·4
1911*	11·6	12·7	24·3	6·0	6·0	4·5	40·6	24·7	25·9	20·6	17·4	129·2
1912*	11·3	12·9	24·2	5·6	5·0	3·7	38·4	17·7	14·9	12·5	11·4	94·7
1913*	11·8	12·7	24·5	5·8	5·4	3·9	39·5	20·3	19·8	15·7	13·6	108·9
1914*	11·4	12·7	24·1	5·5	5·0	3·9	38·5	19·3	18·7	15·0	13·0	104·4
1915*	10·9	12·5	23·4	5·7	5·0	3·7	37·7	18·6	18·2	16·0	15·2	105·8
1916*	10·9	12·3	23·2	5·6	4·9	3·4	36·9	16·9	15·2	11·7	10·3	91·1
1917*	11·0	12·4	23·4	5·6	4·8	3·4	37·1	16·9	15·0	11·6	10·6	91·1
1918*	11·1	12·1	23·2	5·5	4·6	3·4	36·6	17·1	16·1	14·4	13·7	97·9
1919*	12·2	13·7	25·9	6·1	4·9	3·6	40·4	16·4	14·4	11·8	10·3	93·2
1920*	10·4	11·5	21·9	5·3	4·6	3·3	35·0	15·5	13·0	11·0	10·0	84·5
1921*	10·8	11·6	22·4	5·4	4·5	3·0	35·2	14·7	13·7	9·7	7·8	81·2
1922*	10·4	11·6	22·0	5·2	4·1	2·8	33·9	12·4	10·6	9·2	8·6	74·7
1923*	10·2	10·9	21·1	4·6	3·6	2·6	31·9	11·4	10·0	8·3	7·6	69·2
1924*	10·6	11·2	21·8	4·8	3·8	2·6	33·0	12·4	10·8	9·3	8·8	74·2
1925*	10·1	11·1	21·2	4·7	3·7	2·7	32·3	12·5	11·2	9·4	9·0	74·5
1926	10·0	11·3	21·3	4·6	3·6	2·5	31·9	11·6	10·4	8·6	7·7	70·2
1927	10·6	11·6	22·2	4·3	3·4	2·5	32·3	10·7	9·7	8·7	8·2	69·7
1928	10·4	11·2	21·6	4·1	3·0	2·4	31·1	10·7	9·2	7·4	6·8	65·1
Rates per 1,000 of those for 1906–10.												
1906–1910	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1911–1915	991	977	984	983	930	929	970	886	891	919	953	928
1916–1920	957	954	955	966	825	810	920	724	664	694	730	776
1921–1925	904	869	886	862	684	667	831	561	514	532	561	640
1926	870	869	869	793	632	595	794	509	473	497	520	599
1927	922	892	906	741	596	595	803	469	441	503	554	595
1928	904	862	882	707	526	571	774	469	418	428	459	556

* Corrected rates—see page 5.

Distribution of Infant Mortality.—Table V shows how infant mortality was distributed in 1928 between the sexes and throughout the country.

The rates for the county boroughs and for the North are, as usual, in considerable excess, the highest rate in the table for infants of both sexes being 83 for the Northern county boroughs and the lowest 46 for the rural districts of the South. In each year from 1911 onwards the rate for the Northern county boroughs has been the highest in the table, and in each year except 1923 that for the rural districts of the South has been the lowest. For each class of area and for each sex mortality in 1928 decreased regularly from the North to the South of England, a statement applying also to each of the preceding 17 years.

Table V.—Distribution of Infant Mortality, 1928.*

	Males.					Females.					Both Sexes.				
	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	76	—	76	—	—	58	—	58	—	—	67	—	67
County Boroughs ..	94	74	62	81	84	70	58	49	64	64	83	66	56	73	74
Other Urban Districts	80	62	55	84	69	57	49	41	64	52	69	56	48	75	60
Rural Districts ..	73	59	51	76	62	54	46	40	61	48	64	53	46	69	55
All Areas	87	66	64	81	74	64	51	49	63	56	76	59	57	72	65

The comparisons suggested by Table V are facilitated by Table VI, the chief features of which are also very constant from year to year, the greatest excess for the North being transferred from county boroughs to rural districts when comparison is made with the average for districts of similar type and not for the country as a whole, while in the South a similar change in point of view transfers the lowest rate from rural districts to county boroughs.

The excess of 4 per cent. for London is unusual, London excess having occurred last in 1917 and 1918, to the extent of 8 and 11 per cent. respectively. In all other years since 1910 the London rate has been below the general average, except in 1915, when it was 2 per cent. in excess.

* The "North" includes the administrative counties and county boroughs corresponding to the registration counties in the eighth, ninth, and tenth "registration divisions" of the Registrar-General, *i.e.*, Lancashire, Cheshire, and Yorkshire, and counties north of them. The "South" includes England south of the Thames, with the whole of the County of London and the five south-western counties, forming the first, second, and fifth registration divisions. "Wales" corresponds to the eleventh or Welsh registration division and so includes Monmouthshire. All the rest of the country, corresponding to the third, fourth, sixth, and seventh registration divisions, is included in the Midland area. The counties in the four areas are as follows:—

North.	Midlands.		South.	Wales.
Cheshire.	Middlesex.	Gloucestershire.	London.	Monmouthshire.
Lancashire.	Hertfordshire.	Herefordshire.	Surrey.	Glamorganshire.
Yorks, West Riding	Buckinghamshire.	Shropshire.	Kent.	Carmarthenshire.
,, East Riding.	Oxfordshire.	Staffordshire.	Sussex, East.	Pembrokeshire.
,, North Riding.	Northamptonshire.	Worcestershire.	,, West.	Cardiganshire.
Durham.	Soke of Peterborough.	Warwickshire.	Southampton.	Brecknockshire.
Northumberland.	Huntingdonshire.	Leicestershire.	Isle of Wight	Radnorshire.
Cumberland.	Bedfordshire.	Rutlandshire.	Berkshire	Montgomeryshire.
Westmorland.	Cambridgeshire.	Lincolnshire,	Wiltshire.	Flintshire.
	Isle of Ely.	Parts of Holland.	Dorsetshire.	Denbighshire.
	Essex.	,, Kesteven.	Devonshire.	Merionethshire.
	Suffolk, East.	,, Lindsey.	Cornwall.	Caernarvonshire.
	,, West.	Nottinghamshire.	Somersetshire.	Anglesey.
	Norfolk.	Derbyshire.		

Table VI.—Proportionate Distribution of Infant Mortality, 1928. (Both Sexes).

	Mortality per cent. of that in England and Wales.					Mortality per cent. of that in England and Wales in the same class of Area.				
	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	104	—	104	—	—	—	—	—
County Boroughs	127	102	86	112	114	111	89	75	98	100
Other Urban Districts.. ..	105	86	74	115	93	114	92	80	124	100
Rural Districts..	98	81	70	106	85	115	95	82	124	100
All Areas	116	90	88	111	100	—	—	—	—	—

Note.—These percentages are based on the rates in Table XI.

The extent of the fall in infant mortality during the past eighteen years, for which alone its distribution by administrative areas can be compared, but which cover much the greater part of the total fall since the commencement of the century (Table III), has been very uniform in different classes of area and parts of the country, Table VII showing that, as compared with the rates of about fifteen years earlier, the reduction in 1928 ranges only from 33 per cent. for the rural districts of Wales to 45 for the county boroughs of the Midlands.

Table VII.—Distribution of the Recent Fall of Infant Mortality in England and Wales.

Percentage Reduction of Rate for 1928 *compared with that for* 1911–15 *in each case.*

	North	*Midlands*	*South*	*Wales*	*England and Wales*
London	—	—	38	—	38
County Boroughs ..	37	45	41	40	40
Other Urban Districts ..	44	43	43	39	44
Rural Districts	42	36	38	33	38
All Areas	40	43	40	38	41

But although the fall varies little in proportion to its extent, it may be noted that it is greater in the small towns than in any other class of area, and smaller in Wales, except in the county boroughs, than in any section of England. This leading position is, however, a novelty for the small towns, which had not previously registered the greatest decline since 1918, whereas the London rate's reduction below the 1911–15 standard was the greatest for the four classes of area in each year 1923–27.

Distribution of the Mortality of Various Stages of Infancy.—The reduction of mortality at various stages of infancy in the four classes of area distinguished is outlined for the period covered by this form of tabulation in the following table.

Table VIII.—Infant Mortality in Relation to Urbanization.

Mortality (per 1,000 Births) at various Stages of Infancy in different Classes of Area per 1,000 of that for 1911–15.

	Under 4 Weeks.				4 Weeks to 3 Months.				3–6 Months.			
	London.	County Boroughs.	Urban Districts.	Rural Districts.	London.	County Boroughs.	Urban Districts.	Rural Districts	London.	County Boroughs.	Urban Districts.	Rural Districts.
1911–15 ..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1916–20 ..	949	943	940	971	834	810	790	834	793	739	691	726
1921–25 ..	800	855	862	871	574	640	627	672	605	604	550	577
1926 ..	743	821	825	824	519	589	546	622	548	556	485	521
1927 ..	714	828	848	844	448	531	512	623	476	516	466	503
1928 ..	718	798	801	813	544	537	497	543	598	500	387	449

	6–9 Months.				9–12 Months.				Total under 1 Year.			
	London.	County Boroughs.	Urban Districts.	Rural Districts.	London.	County Boroughs.	Urban Districts.	Rural Districts.	London.	County Boroughs.	Urban Districts.	Rural Districts.
1911–15 ..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1916–20 ..	735	729	685	739	738	732	701	736	833	818	800	851
1921–25 ..	578	604	568	583	592	643	573	602	655	700	683	721
1926 ..	501	562	502	541	513	571	497	536	591	654	624	671
1927 ..	504	547	509	580	456	603	549	637	547	640	630	692
1928 ..	583	458	415	434	577	488	406	468	620	599	564	619

As in each of the six preceding years this reduction was greatest, outside London, in the case of the small towns at 3–6 months, at which age their mortality decline has been greater than that for any of the other three classes of area in each of the last fifteen years. At this age the small town mortality is now little more than one-third—38·7 per cent.—of what it was in 1911–15.

London, on the other hand, holds a commanding advantage in regard to the first four weeks of life, at which age not only is its mortality lowest amongst the four classes of area compared, as in every other year from 1911 onwards, but its reduction of 28·2 per cent. as compared with 1911–15 is also by far the greatest, the county boroughs coming next with 20·2 per cent. The London fall at this age was greatest also in each of the eight previous years As a result of this differential fall in London "neo-natal" mortality, its advantage over the country at large at this age has increased from 12·3 per cent. in 1916–20 and 18·0 per cent. in 1921–25 to 20·9 in 1928 (24·4 in 1927), as shown in Table IX.

Table IX.—Infant Mortality in Relation to Urbanization.

Mortality (per 1,000 Births) at various Stages of Infancy in different Classes of Area compared with that for England and Wales at the same Age, taken as 1,000.

	Under 4 Weeks.				4 Weeks–3 Months.				3–6 Months.			
	London.	County Boroughs.	Urban Districts.	Rural Districts.	London.	County Boroughs.	Urban Districts.	Rural Districts.	London.	County Boroughs.	Urban Districts.	Rural Districts.
1911–15 ..	878	1,068	998	966	1,022	1,147	972	790	1,075	1,164	966	735
1916–20 ..	877	1,061	989	987	1,050	1,144	945	812	1,169	1,178	915	730
1921–25 ..	820	1,066	1,004	982	924	1,156	960	837	1,115	1,204	910	726
1926 ..	798	1,073	1,008	974	925	1,179	926	858	1,118	1,228	888	727
1927 ..	756	1,067	1,021	984	862	1,147	937	927	1,038	1,218	913	748
1928 ..	791	1,070	1,004	985	1,057	1,171	917	815	1,376	1,245	800	706

	6–9 Months.				9–12 Months.				Total under 1 Year.			
	London.	County Boroughs.	Urban Districts.	Rural Districts.	London.	County Boroughs.	Urban Districts.	Rural Districts.	London.	County Boroughs.	Urban Districts.	Rural Districts.
1911–15 ..	1,049	1,188	964	717	1,081	1,197	958	688	992	1,135	977	818
1916–20 ..	1,072	1,204	919	738	1,102	1,209	927	699	1,008	1,131	953	848
1921–25 ..	1,032	1,221	931	711	1,049	1,261	900	679	935	1,144	961	850
1926 ..	986	1,253	907	729	1,035	1,275	890	689	916	1,158	951	856
1927 ..	987	1,213	916	777	862	1,260	919	766	853	1,142	968	890
1928 ..	1,345	1,195	879	684	1,330	1,244	830	686	1,036	1,144	929	853

On the other hand 1928 was a bad year for London at all ages over three months, excesses over the general average of from 33·0 to 37·6 per cent. at these three periods resulting in a London excess at all ages under twelve months for the first time since 1918. The London rate is always (i.e., in each year from 1911 onwards) in excess at 3–6 months, at which age the maximum 1928 excess of 37·6 per cent., the highest during 1911–28, occurred, but in no previous year since 1920 was the London rate above the average at each infantile age over four weeks. Even in 1917 and 1918, when the total London excess at 0–12 months was greater than in 1928, it was less at 3–9, and in 1918 also at 9–12 months. But at that time the London advantage for the first four weeks was considerably less than now (about ten per cent. in those years as against 24·4 in 1927 and 20·9 in 1928), and so did not compensate to the same extent for excess in later infancy. In 1928 the London excess at 9–12 months is mainly, and that at 6–9 months largely, accounted for by measles, but of the excess of 3·47 in London infant mortality at 3–6 months 2·01 was due to diarrhœa (Tables 10 and 11).

Some excess of diarrhoea mortality at this age has been usual for London of late years, but as compared with 1921–25 the causes chiefly accounting for increase in excess (over the average for England and Wales) of London mortality in 1928 were diarrhœa and respiratory disease at 3–6 months, respiratory disease and measles at 6–9 months, and measles and respiratory disease at 9–12 months.

The fact that mortality is always lower in London than in any of the other three classes of area during the first four weeks of life is the more remarkable because at each subsequent portion of the first year of life the lowest rate is almost always that of the rural districts. At every age the highest rate is that for the county boroughs save when occasionally, as at 3–12 months in 1928, the London rate is highest. The constancy and growing extent of the London advantage during the first four weeks suggest that if London maternity conditions could be extended to the rest of the country this " neo-natal " mortality, which has fallen since 1911–15 by only 20 per cent. in England and Wales while that for the remainder of infancy has fallen by over 50 per cent., might be at once reduced to its London level, now for the fourth year in succession over 20 per cent. below that for the country at large. It would seem, therefore, of practical interest to ascertain the causes of this remarkable advantage of London at a stage of infancy which is often regarded as affording comparatively little scope for preventive medicine.

Table X.—Deaths during various Portions of the first year of Life, 1928.

			Days.		Weeks.				Months.					
			0–1	1–7	0–1	1–2	2–3	3–4	Total under 4 weeks.	4 weeks to 3 m'nths	3–6	6–9	9–12	Total under one Year.
England and Wales.	All Infants	M	3,919	4,327	8,246	1,554	1,134	921	11,855	4,197	3,557	2,788	2,459	24,856
		F	2,938	3,062	6,000	1,165	858	635	8,658	2,838	2,528	2,080	2,000	18,104
		P	6,857	7,389	14,246	2,719	1,992	1,556	20,513	7,035	6,085	4,868	4,459	42,960
	Legitimate	M	3,523	4,046	7,569	1,434	1,057	848	10,908	3,808	3,259	2,602	2,331	22,908
		F	2,587	2,857	5,444	1,083	792	589	7,908	2,600	2,313	1,947	1,874	16,642
		P	6,110	6,903	13,013	2,517	1,849	1,437	18,816	6,408	5,572	4,549	4,205	39,550
	Illegitimate	M	396	281	677	120	77	73	947	389	298	186	128	1,948
		F	351	205	556	82	66	46	750	238	215	133	126	1,462
		P	747	486	1,233	202	143	119	1,697	627	513	319	254	3,410
	All Areas.	North ..	2,626	2,934	5,560	1,110	806	620	8,096	2,901	2,499	1,999	1,851	17,346
		Midlands	2,174	2,340	4,514	878	623	461	6,476	1,998	1,639	1,330	1,176	12,619
		South ..	1,509	1,501	3,010	518	402	321	4,251	1,570	1,512	1,174	1,105	9,612
		Wales ..	548	614	1,162	213	161	154	1,690	566	435	365	327	3,383
	London		631	618	1,249	215	180	135	1,779	815	918	717	650	4,879
	County Boroughs	England & Wales	2,525	2,701	5,226	1,071	775	606	7,678	2,879	2,650	2,033	1,940	17,180
		North ..	1,453	1,550	3,003	649	473	369	4,494	1,766	1,634	1,246	1,212	10,352
		Midlands	776	802	1,578	306	210	148	2,242	782	720	568	523	4,835
		South ..	185	230	415	63	53	59	590	210	184	139	140	1,263
		Wales ..	111	119	230	53	39	30	352	121	112	80	65	730
	Other Urban Districts	England & Wales	2,286	2,546	4,832	919	652	511	6,914	2,167	1,636	1,436	1,242	13,395
		North ..	797	966	1,763	328	230	173	2,494	821	620	539	461	4,935
		Midlands	812	896	1,708	352	242	187	2,489	768	583	495	427	4,762
		South ..	416	368	784	136	101	72	1,093	300	239	194	185	2,011
		Wales ..	261	316	577	103	79	79	838	278	194	208	169	1,687
	Rural Districts	England & Wales	1,415	1,524	2,939	514	385	304	4,142	1,174	881	682	627	7,506
		North ..	376	418	794	133	103	78	1,108	314	245	214	178	2,059
		Midlands	586	642	1,228	220	171	126	1,745	448	336	267	226	3,022
		South ..	277	285	562	104	68	55	789	245	171	124	130	1,459
		Wales ..	176	179	355	57	43	45	500	167	129	77	93	966
	England and Wales	1st Quarter	1,779	2,143	3,922	814	662	516	5,914	2,298	1,889	1,729	1,663	13,493
		2nd ,,	1,737	1,866	3,603	701	504	366	5,174	1,533	1,260	1,113	1,204	10,284
		3rd ,,	1,697	1,556	3,253	533	323	275	4,384	1,243	1,268	874	656	8,425
		4th ,,	1,644	1,824	3,468	671	503	399	5,041	1,961	1,668	1,152	936	10,758

Table XI.—Infant Mortality at various Ages, 1928.

			Days.		Weeks.				Months.					Total under one year.
			0–1	1–7	0–1	1–2	2–3	3–4	Total under 4 weeks	4 weeks to 3 m'nths	3–6	6–9	9–12	
England and Wales.	All Infants ..	M	11·6	12·8	24·5	4·6	3·4	2·7	35·2	12·4	10·5	8·3	7·3	73·7
		F	9·1	9·5	18·6	3·6	2·7	2·0	26·8	8·8	7·8	6·4	6·2	56·0
		P	10·4	11·2	21·6	4·1	3·0	2·4	31·1	10·7	9·2	7·4	6·8	65·1
	Legitimate ..	M	10·9	12·6	23·5	4·5	3·3	2·6	33·9	11·8	10·1	8·1	7·2	71·1
		F	8·4	9·3	17·6	3·5	2·6	1·9	25·6	8·4	7·5	6·3	6·1	53·9
		P	9·7	10·9	20·6	4·0	2·9	2·3	29·8	10·2	8·8	7·2	6·7	62·7
	Illegitimate ..	M	26·1	18·6	44·7	7·9	5·1	4·8	62·5	25·7	19·7	12·3	8·5	128·6
		F	24·1	14·1	38·2	5·6	4·5	3·2	51·5	16·4	14·8	9·1	8·7	100·4
		P	25·1	16·4	41·5	6·8	4·8	4·0	57·1	21·1	17·3	10·7	8·6	114·8
All Areas.	North		11·4	12·8	24·2	4·8	3·5	2·7	35·3	12·6	10·9	8·7	8·1	75·6
	Midlands ..		10·1	10·9	20·9	4·1	2·9	2·1	30·0	9·3	7·6	6·2	5·5	58·5
	South		8·9	8·9	17·9	3·1	2·4	1·9	25·2	9·3	9·0	7·0	6·6	57·0
	Wales		11·7	13·1	24·9	4·6	3·4	3·3	36·2	12·1	9·3	7·8	7·0	72·4
London..			8·7	8·5	17·3	3·0	2·5	1·9	24·6	11·3	12·7	9·9	9·0	67·4
County Boroughs	England and Wales ..		10·9	11·7	22·6	4·6	3·4	2·6	33·3	12·5	11·5	8·8	8·4	74·4
	North		11·6	12·4	24·0	5·2	3·8	2·9	35·9	14·1	13·0	9·9	9·7	82·6
	Midlands ..		10·6	11·0	21·6	4·2	2·9	2·0	30·7	10·7	9·9	7·8	7·2	66·3
	South		8·2	10·2	18·3	2·8	2·3	2·6	26·1	9·3	8·1	6·1	6·2	55·8
	Wales		11·1	11·9	23·0	5·3	3·9	3·0	35·1	12·1	11·2	8·0	6·5	72·9
Other Urban Districts	England and Wales ..		10·3	11·5	21·8	4·1	2·9	2·3	31·2	9·8	7·4	6·5	5·6	60·4
	North		11·1	13·4	24·5	4·6	3·2	2·4	34·7	11·4	8·6	7·5	6·4	68·6
	Midlands ..		9·5	10·5	20·0	4·1	2·8	2·2	29·1	9·0	6·8	5·8	5·0	55·7
	South		10·0	8·8	18·9	3·3	2·4	1·7	26·3	7·2	5·7	4·7	4·4	48·3
	Wales		11·5	14·0	25·5	4·6	3·5	3·5	37·1	12·3	8·6	9·2	7·5	74·6
Rural Districts	England and Wales ..		10·5	11·3	21·7	3·8	2·8	2·2	30·6	8·7	6·5	5·0	4·6	55·5
	North		11·7	13·0	24·7	4·1	3·2	2·4	34·4	9·8	7·6	6·6	5·5	64·0
	Midlands ..		10·3	11·3	21·5	3·9	3·0	2·2	30·6	7·9	5·9	4·7	4·0	53·0
	South		8·6	8·9	17·5	3·2	2·1	1·7	24·6	7·6	5·3	3·9	4·1	45·5
	Wales		12·5	12·7	25·2	4·1	3·1	3·2	35·5	11·9	9·2	5·5	6·6	68·7

Tables X and XI continue the analysis of infant mortality by detail of age, initiated in 1905 with distinction of registration counties mainly urban and mainly rural in character, and expanded in 1917 to the degree of geographical distinction now in use, but curtailed in detail of age (after the first four weeks of life) in 1926. Distinctions of sex and legitimacy are shown only for England and Wales as a whole, but are available for each of the populations dealt with. Some of the facts and rates applying to the illegitimate will be found in Table 13.

The features of Table XI closely resemble those of its predecessors, showing, in addition to increase of mortality with urbanization, almost constant increase also from the South to the North of England from the first day of life onwards in all classes of area. To this rule the table furnishes but three exceptions, all in the form of excess for the South over the Midlands—in the county boroughs during the fourth week of life, in the smaller towns on the first day, and in the rural districts at 9–12 months.

Urban excess, on the other hand, is not present from birth, but is well established by the second week of life, after which it continues to increase throughout infancy, till at 9–12 months the rate for the county boroughs is not far from double (in 1928

1·8 times) that for the rural districts. For the first day of life, however, the highest rate in Table XI is that of the Welsh rural districts, and in ten of the eleven preceding years the rural districts of the North returned the highest rate on the first day. During the remainder of the first week of life, also, mortality is very much the same in town and country, the contrast at this age being between London and the rest of England and Wales. Indeed it will be noted that at 1–7 days London mortality is so much below that of the rest of the country that all classes of area outside London, county boroughs, urban districts, and rural districts alike, return a rate exceeding the average for England and Wales. This is quite a usual experience at this age, having been met with six times in the last twelve years.

The extent of these differences is better seen in Table XII, where the other rates in Table XI are shown as percentages of those for England and Wales at the same age.

Table XII.—Infant Mortality at various Ages, in different Classes of Area and Sections of the Country, per cent. of that of all Infants of the same Age in England and Wales, 1928.

	Days.		Weeks.				Months.					Total under 1 year
	0–1	1–7	0–1	1–2	2–3	3–4	Total under 4 weeks.	4 weeks to 3 months	3–6	6–9	9–12	
England and Wales P	100	100	100	100	100	100	100	100	100	100	100	100
England and Wales M	112	114	113	112	113	113	113	116	114	112	107	113
England and Wales F	88	85	86	88	90	83	86	82	85	86	91	86
All Areas												
North	110	114	112	117	117	113	114	118	118	118	119	116
Midlands	97	97	97	100	97	88	96	87	83	84	81	90
South	86	79	83	76	80	79	81	87	98	95	97	88
Wales	113	117	115	112	113	138	116	113	101	105	103	111
London	84	76	80	73	83	79	79	106	138	134	132	104
County Boroughs—												
England and Wales ..	105	104	105	112	113	108	107	117	125	119	124	114
North	112	111	111	127	127	121	115	132	141	134	143	127
Midlands	102	98	100	102	97	83	99	100	108	105	106	102
South	79	91	85	68	77	108	84	87	88	82	91	86
Wales	107	106	106	129	130	125	113	113	122	108	96	112
Other Urban Districts—												
England and Wales..	99	103	101	100	97	96	100	92	80	88	82	93
North	107	120	113	112	107	100	112	107	93	101	94	105
Midlands	91	94	93	100	93	92	94	84	74	78	74	86
South	96	79	88	80	80	71	85	67	62	64	65	74
Wales..	111	125	118	112	117	146	119	115	93	124	110	115
Rural Districts— ..												
England and Wales..	101	101	100	93	93	92	98	81	71	68	68	85
North	113	116	114	100	107	100	111	92	83	89	81	98
Midlands	99	101	100	95	100	92	98	74	64	64	59	81
South	83	79	81	78	70	71	79	71	58	53	60	70
Wales	120	113	117	100	103	133	114	111	100	74	97	106

It may be noted that the two contrasts, that between the rates for the North and South of England, and that between those of the county boroughs and of the rural districts, are very much the same—116 North, 88 South; and 114 county boroughs, 85 rural districts—for the first year of life as a whole, though the general urban excess commences later in life, and becomes much more developed in later infancy than the Northern.

Deaths occurring immediately after Birth—Deaths registered as occurring during the first thirty minutes of life have been separately tabulated for 1928 in order to elucidate the effect of the difference between the definition of still-birth applied in this country, which accepts any movement of the newly delivered fœtus as a sign of life, and that recommended for general use by the Health Section of the League of Nations, which demands the evidence of respiration before accepting the transformation of the fœtus into an infant. As respiration is very seldom established after a delay of more than thirty minutes, the number of live births under the English definition which would be classed as still-births under the international cannot exceed the total deaths occurring in the first thirty minutes of life. Indeed, it must fall short of this number, in so far as deaths within thirty minutes of birth occur after the establishment of pulmonary respiration.

It may be seen, however, from Tables 14A and XIII, that if all deaths registered as occurring soon enough after complete delivery to have been even possibly still-births in the international sense, had in reality been still-births the number of these would have been increased only from 27,580 to 28,769, or by 4·3 per cent. The actual effect of the difference in still-birth definition must, of course, be much less.

The tabulation of these extremely early deaths by cause and legitimacy brings out some facts of much interest.

Death within half an hour of birth is seen to have been specially associated in 1928 with illegitimacy and with the female sex. Of 6,857 deaths within 24 hours of birth 1,189, or 17 per cent., occurred within the first 30 minutes of life; but for illegitimate males this proportion was 42 per cent. as against 13 for the legitimate ; and for illegitimate females, 53 as against 15. These ratios, moreover, vary greatly with the cause of death, being especially high for causes involving recorded or probable violence and neglect. The last section of Table XIII shows that, for the legitimate, the only causes with ratios of deaths under 30 minutes exceeding the general average of 14 per cent. are of the nature of neglect or of recorded or possible violence. These are—injury at birth, 29 ; atelectasis, 20, lack of care, 90, homicide 100, and other forms of violence, 100. For violence and lack of care as a whole, the percentage is 70. The list for the illegitimate is much the same, but with substitution for atelectasis of accidental suffocation (85 per cent.), other diseases peculiar to early infancy (55), and other causes (64). For infants as a whole the proportion of 17 per cent. for all causes is exceeded for every cause distinguished except convulsions (*nil*), congenital malformations (12), congenital debility (12) and prematurity (11). These, it will be seen, are causes from which many new-born infants must die, however well cared for, whereas the other causes distinguished, from which death occurs with excessive frequency in the first 30 minutes of life, are more preventable.

Table XIII.—England and Wales, 1928.—Mortality

International List Number	Cause of Death.	Deaths under 30 Minutes.						
		All Infants.	Legitimate.			Illegitimate.		
			Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.
79, 80	Convulsions	—	—	—	—	—	—	—
159	Congenital malformations	54	23	29	52	1	1	2
160 (1)	Congenital debility	49	23	25	48	1	—	1
161 (1)	Premature birth	476	237	187	424	26	26	52
161 (2)	Injury at birth	173	83	66	149	8	16	24
162 (2)	Atelectasis	109	46	49	95	4	10	14
160 (2), 162(1, 3)	Other diseases peculiar to early infancy	10	2	2	4	3	3	6
163	Lack of care	225	30	23	53	88	84	172
180	Accidental suffocation	18	1	—	1	9	8	17
197–199	Homicide	32	—	2	2	12	18	30
	Other forms of violence	23	—	1	1	9	13	22
	Violence and lack of care	*298*	*31*	*26*	*57*	*118*	*123*	*241*
	Other causes	20	3	3	6	7	7	14
	All causes	1,189	448	387	835	168	186	354

Mortality

79, 80	Convulsions	—	—	—	—	—	—	—
159	Congenital malformations	82	71	94	82	66	69	67
160 (1)	Congenital debility	74	71	81	76	66	—	34
161 (1)	Premature birth	721	736	606	672	1,717	1,786	1,751
161 (2)	Injury at birth	262	258	214	236	528	1,099	808
162 (2)	Atelectasis	165	143	159	151	264	687	471
160 (2), 162(1,3)	Other diseases peculiar to early infancy	15	6	6	6	198	206	202
163	Lack of care	341	93	75	84	5,810	5,771	5,791
180	Accidental suffocation	27	3	—	2	594	550	572
197–199	Homicide	48	—	6	3	792	1,237	1,010
	Other forms of violence	35	—	3	2	594	893	741
	Violence and lack of care	*451*	*96*	*84*	*90*	*7,790*	*8,451*	*8,114*
	Other causes	30	9	10	10	462	481	471
	All causes	1,801	1,391	1,254	1,324	11,091	12,779	11,918

Percentage

79, 80	Convulsions	—	—	—	—	—	—	—
159	Congenital malformations	12	12	13	13	8	14	11
160 (1)	Congenital debility	12	10	15	13	10	—	4
161 (1)	Premature birth	11	10	11	10	14	19	16
161 (2)	Injury at birth	31	28	30	29	36	70	53
162 (2)	Atelectasis	21	18	22	20	18	53	34
160 (2), 162(1, 3)	Other diseases peculiar to early infancy	22	11	12	12	60	50	55
163	Lack of care	92	86	96	90	92	93	92
180	Accidental suffocation	46	17	—	5	82	89	85
197–199	Homicide	91	—	100	100	92	90	91
	Other forms of violence	88	—	100	100	82	93	88
	Violence and lack of care	*86*	*76*	*65*	*70*	*90*	*92*	*91*
	Other causes	26	12	10	11	70	58	64
	All causes	17	13	15	14	42	53	47

during the first 30 Minutes and during the first 24 Hours of Life.

Deaths at 30 Minutes to 24 Hours.							Total Deaths under 24 Hours.							International List Number.
All Infants.	Legitimate.			Illegitimate.			All Infants.	Legitimate.			Illegitimate.			
	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.		Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	
Deaths.														
50	36	13	49	1	—	1	50	36	13	49	1	—	1	79, 80
378	168	193	361	11	6	17	432	191	222	413	12	7	19	159
357	197	137	334	9	14	23	406	220	162	382	10	14	24	160 (1)
3,945	2,200	1,477	3,677	157	111	268	4,421	2,437	1,664	4,101	183	137	320	161 (1)
384	211	152	363	14	7	21	557	294	218	512	22	23	45	161 (2)
414	214	173	387	18	9	27	523	260	222	482	22	19	41	162 (2)
35	16	14	30	2	3	5	45	18	16	34	5	6	11	160 (2) 162(1,3)
20	5	1	6	8	6	14	245	35	24	59	96	90	186	163
21	5	13	18	2	1	3	39	6	13	19	11	9	20	180
3	—	—	—	1	2	3	35	—	2	2	13	20	33	197–199
3	—	—	—	2	1	3	26	—	1	1	11	14	25	
47	*10*	*14*	*24*	*13*	*10*	*23*	*345*	*41*	*40*	*81*	*131*	*133*	*264*	
58	23	27	50	3	5	8	78	26	30	56	10	12	22	
5,668	3,075	2,200	5,275	228	165	393	6,857	3,523	2,587	6,110	396	351	747	
per Million (live) Births.														
76	112	42	78	66	—	34	76	112	42	78	66	—	34	79, 80
572	522	626	573	726	412	572	654	593	720	655	792	481	640	159
541	612	444	530	594	962	774	615	683	525	606	660	962	808	160 (1)
5,975	6,832	4,787	5,831	10,365	7,626	9,023	6,696	7,568	5,393	6,504	12,082	9,413	10,774	161 (1)
582	655	493	576	924	481	707	844	913	707	812	1,452	1,580	1,515	161 (2)
627	665	561	614	1,188	618	909	792	807	720	764	1,452	1,305	1,380	162 (2)
53	50	45	48	132	206	168	68	56	52	54	330	412	370	160 (2), 161,(1, 3)
30	16	3	10	528	412	471	371	109	78	94	6,338	6,183	6,262	163
32	16	42	29	132	69	101	59	19	42	30	726	618	673	180
5	—	—	—	66	137	101	53	—	6	3	858	1,374	1,111	197–199
5	—	—	—	132	69	101	39	—	3	2	726	962	842	
71	*31*	*45*	*38*	*858*	*687*	*774*	*528*	*127*	*130*	*128*	*8,649*	*9,138*	*8,888*	
88	71	88	79	198	344	269	118	81	97	89	660	824	741	
8,584	9,549	7,131	8,366	15,052	11,336	13,231	10,385	10,940	8,385	9,690	26,144	24,115	25,150	
of Total under 24 Hours.														
100	100	100	100	100	—	100	100	100	100	100	100	—	100	79, 80
88	88	87	87	92	86	89	100	100	100	100	100	100	100	159
88	90	85	87	90	100	96	100	100	100	100	100	100	100	160 (1)
89	90	89	90	86	81	84	100	100	100	100	100	100	100	161 (1)
69	72	70	71	64	30	47	100	100	100	100	100	100	100	161 (2)
79	82	78	80	82	47	66	100	100	100	100	100	100	100	162 (2)
78	89	88	88	40	50	45	100	100	100	100	100	100	100	160 (2), 161(1, 3).
8	14	4	10	8	7	8	100	100	100	100	100	100	100	163
54	83	100	95	18	11	15	100	100	100	100	100	100	100	180
9	—	—	—	8	10	9	100	100	100	100	100	100	100	197–199
12	—	—	—	18	7	12	100	100	100	100	100	100	100	
14	*24*	*35*	*30*	*10*	*8*	*9*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	
74	88	90	89	30	42	36	100	100	100	100	100	100	100	
83	87	85	86	58	47	53	100	100	100	100	100	100	100	

The conclusion seems inevitable that many of these early deaths have been deliberately brought about, and this impression is greatly strengthened by their special incidence on the illegitimate and on the female sex, and by the very significant causal distribution of this excess. In association with the proportions (under 30 minutes per 100 under 24 hours) already noted for deaths from all causes, of 42 and 53 for illegitimate males and females, as compared with 13 and 15 for the legitimate, we have 36 and 70 for birth injury, 92 and 93 for lack of care, 82 and 89 for accidental suffocation, 92 and 90 for homicide, and 82 and 93 for other forms of violence. For violence and lack of care as a whole, the ratios are 90 and 92. Illegitimate infants die immediately after birth at a very much higher rate than legitimate, and the excess is many times greater from violence and neglect than from other causes.

The following table records the degree of this excess for the single year for which these facts have been tabulated.

Table XIV.—England and Wales, 1928: Illegitimate per cent. of Legitimate Infant Mortality from various causes during the first 30 Minutes and the remainder of the first 24 Hours of Life.

	Both Sexes.			Males.			Females.		
	Under 30 minutes.	30 minutes to 24 hours.	Under 24 hours.	Under 30 minutes.	30 minutes to 24 hours.	Under 24 hours.	Under 30 minutes.	30 minutes to 24 hours.	Under 24 hours.
Convulsions	—	44	44	—	59	59	—	—	—
Congenital malformations.	82	100	98	93	139	134	73	66	67
Congenital debility ..	45	146	133	93	97	97	—	217	183
Premature birth ..	261	155	166	233	152	160	295	159	175
Injury at birth ..	342	123	187	205	141	159	514	98	223
Atelectasis	312	148	181	185	179	180	432	110	181
Other diseases peculiar to early infancy.	3,367	350	685	3,300	264	589	3,433	458	792
Lack of care	6,894	4,710	6,662	6,247	3,300	5,815	7,695	13,733	7,927
Accidental suffocation	28,600	348	2,243	19,800	825	3,821	—	164	1,471
Homicide	33,667	—	37,033	—	—	—	20,617	—	22,900
Other forms of violence	37,050	—	42,100	—	—	—	29,767	—	32,067
Violence and lack of care.	*9,016*	*2,037*	*6,944*	*8,115*	*2,768*	*6,810*	*10,061*	*1,527*	*7,029*
Other causes ..	4,710	341	833	5,133	279	815	4,810	391	849
All causes ..	900	158	260	797	158	239	1,019	159	288

It shows that mortality from violence and lack of care was over 90 times as great during the first 30 minutes for the illegitimate as for the legitimate, whereas for all other causes (Table XIII) it was only about three times as great. Violence, in this sense, accounts for 68 per cent. of all deaths of the illegitimate during the first half hour of life, but for only 7 per cent. in the case of the legitimate. Many of these deaths, however, relate to abandoned newly-born infants of unknown parentage, which for tabulation are regarded as of illegitimate birth.

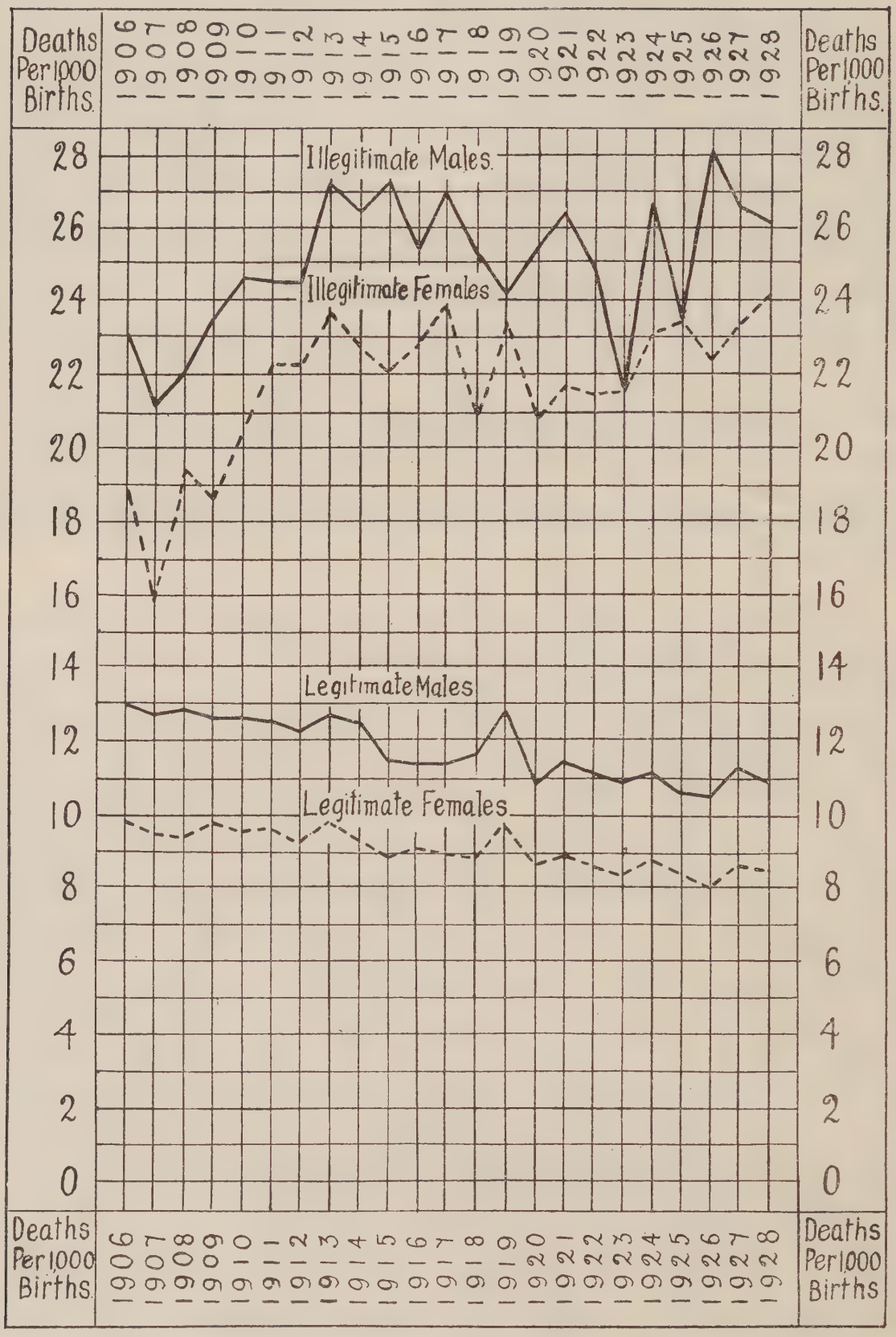
Table XIV shows that this early excess for the illegitimate is appreciably greater for females than for males, the percentages, for all causes jointly, being 1,019 per cent. for the former and 797

for the latter, and, for violence and lack of care, 10,061 per cent. for females and 8,115 for males. This accords with the observation, frequently made during recent years from the less detailed records of infant mortality, that excess of total infant mortality for the illegitimate is persistently greater for females than for males. This has been the case in 22 out of the last 23 years, 1926 forming the sole exception. It would appear that, amongst the "unwanted" illegitimate, females are even more unwanted than males. From 1908 onwards there has been no exception to this rule of greater illegitimate excess for females, so far as the first day of life, at which it is much higher than in the remainder of the first week, is concerned, illegitimate excess having ranged in different years from 74 to 168 per cent. for males, and from 91 to 187 (1928 see Table XI) per cent. for females. For the rest of the first week, illegitimate excess for males has ranged, since commencement of the record in 1906, only from 44 to 78 per cent., and for females from 52 to 96. In all but five of these years, including the first three, 1906–08, the excess has been greater for females at this age also.

One of the most sinister features of this comparison is pictured in Diagram I, which shows that on the first day of life the excess mortality of the illegitimate of each sex is not only, as shown above, especially high, but is rapidly increasing, owing to rise in the rate for the illegitimate coincident with steady slight fall in that for the legitimate. Unless this can be accounted for by increasing accuracy in certification, cases which would earlier have been treated as still-births and so ignored having later been registered both as births and as deaths, the diagram shows that in addition to recognising the existence of excess mortality for new-born illegitimates we must admit its increase. But the rapid increase from 1907 to 1913, during which years the rate for all infants on the first day rose uninterruptedly from 18·6 in 1907 to 25·6 in 1913, or by no less than 38 per cent. in six years, suggests the operation of a special factor at this time. This may be found in the Notification of Births Act, which was passed as an adoptive measure in 1907, brought gradually into use throughout the country, and made compulsory in all areas in 1915. It may be possible that this Act, by providing information of births at a time when their circumstances can be investigated, has had the effect of diminishing the practice of treating as still-births, and so leaving unregistered, the births of infants dying within 24 hours. This of course involves in each such case the registration of an additional birth and death, and therefore increase of the mortality of the first day of life. It will, however, be noted that the rates for the legitimate show no trace of any similar influence at the same period.

No obvious effect on the rates for 1928 of the newly instituted registration of still-births is discernible in the diagram.

Diagram I.—England and Wales: Infant Mortality at 0–24 Hours by Sex and Legitimacy, 1906–1928.



As the excess mortality of the illegitimate on the first day of life is greater, and increasing faster, for females than for males, it follows that the excess mortality of males at this age is less for the illegitimate than for the legitimate, and that this difference is increasing. During the period available for comparison this excess has changed but little for the legitimate, from 32 per cent. in 1906–10 to 30 in 1921–25 and 1928, whereas for the illegitimate it has fallen from 23 per cent. in 1906–10 to 11 in 1921–25 and 8 in

1928. The natural advantage of the female, as evidenced by a male excess for all infants varying in different years from 25 to 33 per cent. (27 in 1928), is evidently being increasingly discounted for the illegitimate by some adverse factor applying especially to them.

Causes of Infant Mortality.—The causes of infant mortality are set forth in Tables 8–12, which compare the records of 1928 with those of previous years, and show the incidence of mortality from each cause upon infants distinguished by sex, age, legitimacy, class of area, and section of the country. From these tables has been prepared the comparison in Table XV between the mortality from the chief causes distinguished at various ages in 1928, 1927, and 1923–27.

Table XV.—England and Wales : Comparison of Infant Mortality Rates (per 1,000 Live Births) in 1928 with those of recently preceding years.

	Under 4 weeks.	4 weeks to 3 months.	3–6 months.	6–9 months.	9–12 months.	Under 1 year.
	Increase or Decrease of Mortality in 1928, per cent. of that in 1927.					
	− 4	− 1	− 5	− 15	− 18	− 7
	Increase or Decrease of Mortality in 1928, per cent. of that in 1923–27.					
	− 4	− 10	− 12	− 18	− 20	− 10
	Increase or Decrease from various Causes, as compared with 1923–27.					
Measles (7)	− 0·01	+ 0·01	—	+ 0·02	+ 0·01	+ 0·03
Whooping cough (9)	− 0·03	− 0·10	− 0·10	− 0·20	− 0·24	− 0·65
Influenza (11)	− 0·04	− 0·04	− 0·10	− 0·11	− 0·13	− 0·40
Tuberculosis, all forms (31–37)	− 0·01	− 0·01	—	− 0·07	− 0·11	− 0·19
Convulsions (80)	− 0·54	− 0·25	− 0·22	− 0·16	− 0·13	− 1·30
Bronchitis and pneumonia (99–101)	− 0·07	− 0·16	− 0·46	− 0·84	− 0·94	− 2·47
Diarrhœa and enteritis (113)	− 0·13	− 0·16	− 0·13	− 0·13	− 0·08	− 0·62
Developmental and wasting diseases (159, 160, 161 : 1, 162 : 2).	− 0·77	− 0·30	− 0·19	− 0·07	− 0·05	− 1·38
Congenital defects (malformations and atelectasis) (159, 162 : 2).	*+ 0·40*	*+ 0·08*	*+ 0·04*	—	*− 0·01*	*+ 0·51*
Congenital debility, sclerema and icterus (160).	*− 0·86*	*− 0·37*	*− 0·22*	*− 0·07*	*− 0·04*	*− 1·55*
Premature birth (161 : 1)	*− 0·32*	*− 0·02*	*− 0·01*	—	*0·00*	*− 0·34*
Injury at birth (161 : 2)	+ 0·39	− 0·01	− 0·00	—	—	+ 0·38
Suffocation—in bed or not stated how (180 part).	− 0·01	+ 0·01	+ 0·01	—	*+ 0·01*	+ 0·02
Other causes	− 0·01	− 0·11	− 0·08	− 0·03	+ 0·01	− 0·25
All causes	− 1·22	− 1·12	− 1·26	− 1·60	− 1·64	− 6·85
	Percentage Increase or Decrease as compared with 1923–27.					
Measles (7)	− 62	+ 25	—	+ 5	+ 1	+ 2
Whooping cough (9)	− 38	− 19	− 17	− 27	− 29	− 23
Influenza (11)	− 57	− 31	− 59	− 58	− 68	− 54
Tuberculosis, all forms (31–37)	− 50	− 10	—	− 18	− 24	− 15
Convulsions (80)	− 30	− 33	− 40	− 42	− 45	− 35
Bronchitis and pneumonia (99–101)	− 5	− 5	− 13	− 22	− 26	− 16
Diarrhœa and enteritis (113)	− 19	− 9	− 6	− 10	− 9	− 9
Developmental and wasting diseases (159, 160, 161 : 1, 162 : 2).	− 3	− 8	− 14	− 16	− 21	− 5
Congenital defects (malformations and atelectasis) (159, 162 : 2).	*+ 9*	*+ 8*	*+ 9*	—	*− 8*	*+ 9*
Congenital debility, sclerema and icterus (160)	*− 24*	*− 27*	*− 29*	*− 30*	*− 36*	*− 26*
Premature birth (161 : 1)	*− 2*	*− 1*	*− 5*	—	*− 50*	*− 2*
Injury at birth (161 : 2)	+ 26	− 33	− 40	—	—	+ 25
Suffocation—in bed or not stated how (180 part).	− 4	+ 6	+ 10	—	+100	+ 4
Other causes	− 0	− 8	− 6	− 3	+ 1	− 3
All causes	− 4	− 10	− 12	− 18	− 20	− 10

Note.—The percentages in this table are based on rates per 100,000 live births, and differ on this account from those derivable from Table IV.

The fall of 10 per cent. in mortality from all causes as compared with that of the preceding five years is contributed to by all the causes distinguished in the table except measles, congenital defects, overlying, and birth injury, the rates for which alone show increase, slight, except in the case of the last mentioned.

The most important declines are those for bronchitis and pneumonia, congenital debility, and convulsions, which jointly account for 78 per cent. of the total fall. Decline under the latter two headings is doubtless due very largely to substitution of more definite causes for these vague conceptions of disease, but the large fall of 2·47 (deaths per 1,000 births) from bronchitis and pneumonia, much the greatest in the table, is not subject to any such discount and presumably reflects a real advance in infant hygiene, conjoined with favourable weather conditions. The rate 13·17, for the two diseases jointly, is the lowest yet recorded, that of 13·43 for 1923, when infant mortality generally was lower than in any other year prior to 1928, coming next. The joint rate for the two diseases is quoted rather than those for each separately, since a process of transfer from bronchitis to pneumonia has evidently been in operation for many years. Since the beginning of the century, the rate for bronchitis has fallen from 12·58 (1901) to 3·50 in 1928, but that from pneumonia, 9·67 in 1928, has varied only between a minimum of 8·88 (1923) and a maximum of 13·50 (1915). Together these two headings cover almost all the respiratory mortality of infancy, other respiratory diseases accounting for but 0·30 in 1928. The total respiratory rate for the year, 13·47, is accordingly the lowest so far recorded, 1923 with 13·79 coming next.

Next to the respiratory diseases congenital debility provides the largest decline (1·55) in Table XV. This form of return is rapidly disappearing from our records. The highest annual rate during the present century was that for its first year, 1901, and from 20·10 in that year this rate has fallen very steadily to 3·87 in 1928. Many of the deaths formerly ascribed to it may now be ascribed to premature birth, mortality from which varies little, the maximum rate for the present century being 21·68 in 1919, and the minimum 17·49 in 1926. Taking account, however, of the enormous reduction of the debility rate, it may be surmised that mortality from prematurity is really falling considerably. These falls are partly off-set by increases from two other causes of death chiefly affecting early infancy, birth injury and congenital malformation, though how far, if at all, these increases are genuine, and how far they are ascribable merely to increasing definiteness of certification, it appears quite impossible to say. Table 9 shows increase for 1928 under both headings, and during the present century mortality ascribed to birth injury has risen from a minimum of 0·65 in 1901 to a maximum of 1·90 in 1928, while that from malformations has risen from a minimum of 3·86 in 1901 to a maximum of 5·63 in 1928. The latter two rates are inclusive of icterus neonatorum and diseases of the umbilicus, grouped with

congenital malformations up to 1911. Since that year the rate for malformations alone has risen from 3·66 in 1911 to 4·92, the highest yet recorded, in 1928. If this increase does not represent increasing accuracy of certification in the shape of transfer from other headings, especially congenital debility, it constitutes a rather remarkable phenomenon. The tabulation of infant mortality in 1921 by parents' occupations showed that this form of mortality is increased by manual labour on the part of the mother (Decennial Supplement, 1921, Part II). Thus it was higher in 1921 for the illegitimate children of occupied than of unoccupied mothers, and in both 1911 and 1921 it was especially high for the legitimate children of textile working fathers, many of whose wives, of course, also work in the mills. There is thus a possibility that the increase, if real, may be accounted for by greater physical activity on the part of expectant mothers of late years, though it does not follow, even if this is so, that the mortality of infants is thereby being increased, for the small increase tabulated under the head of malformations (Table 9), even if entirely so accounted for, may well be off-set by reduction under other headings resulting from increased well-being of the mother during pregnancy as the result of wages earned.

Comparison of the rates for 1928 with those for the ten preceding years in Table 9 shows the former as lower than any one of the latter for the following causal headings—tuberculosis, tuberculosis of the nervous system, developmental and wasting diseases, influenza, syphilis, meningitis, convulsions, bronchitis, respiratory disease in general, gastritis, and congenital debility. Similar statements applying to the experience of several consecutive recent years shows how rapid is the decline of infant mortality under almost every causal heading distinguished in the table. But the rates for malformations and for birth injury in 1928 are the highest in the table.

Table XVI, which contrasts the mortality of male with that of female, and of legitimate with that of illegitimate infants, shows that the excess in mortality of males, which has greatly increased along with and in consequence of (Review for 1921) the fall in infant mortality during the present century, was 32 per cent. in 1928.

From 1841–45 to 1896–1900, while infant mortality remained fairly constant at about 150 deaths per 1,000 births, the ratio of male excess was also correspondingly constant at about 20–22 per cent. But when infant mortality began to fall, in the early years of the present century, the ratio of male excess began at once to rise, reaching 28 per cent. in 1916–20. (Review for 1921, Diag. 2). Since then the further fall of mortality from 90 in 1916–20 to 76 in 1921–25 (Table 1 Part 1) has been accompanied by further increase of male excess to 30 per cent. in 1921–25, and to 32 per cent. in 1928, the highest yet reached.

This male excess is shared, as usual, by all the causes distinguished in Table XVI except whooping cough, its extent ranging from 23 per cent. for congenital defects to 58 for congenital debility.

Table XVI.—England and Wales : Infant Mortality by Sex and Legitimacy, 1928.

		Deaths per 1,000 Live Births.						Mortality per cent.				
		All Infants.		Legitimate Infants.		Illegitimate Infants.		Male of Female Infants.			Illegitimate of Legitimate Infants.	
		Male.	Female.	Male.	Female.	Male.	Female.	All Infants.	Legitimate.	Illegitimate	Male	Female.
All causes.	Under four weeks	35·16	26·80	33·87	25·63	62·52	51·53	131	132	121	185	201
	4 weeks—3 months	12·45	8·78	11·82	8·43	25·68	16·35	142	140	157	217	194
	3–6 months	10·55	7·82	10·12	7·50	19·67	14·77	135	135	133	194	197
	6–9 ,, ...	8·27	6·44	8·08	6·31	12·28	9·14	128	128	134	152	145
	9–12 ,, ...	7·29	6·19	7·24	6·07	8·45	8·66	118	119	98	117	143
	Total under 1 year	73·72	56·03	71·14	53·94	128·61	100·45	132	132	128	181	186
All ages under one year.	Measles (7)	1·56	1·20	1·53	1·16	2·24	2·06	130	132	109	146	178
	Whooping Cough (9) ..	2·03	2·20	2·02	2·20	2·18	2·20	92	92	99	108	100
	Tuberculosis, all forms (31–37)	1·21	0·93	1·19	0·93	1·58	1·03	130	128	153	133	111
	Syphilis (38)	0·83	0·59	0·69	0·49	3·83	2·75	141	141	139	555	561
	Convulsions (80)	2·94	1·96	2·91	1·91	3·57	2·95	150	152	121	123	154
	Bronchitis and pneumonia (99–101).	14·93	11·33	14·79	11·19	17·83	14·29	132	132	125	121	128
	Diarrhœa and enteritis (113)	7·31	5·05	6·90	4·77	16·11	10·99	145	145	147	233	230
	Developmental and wasting diseases (159, 160, 161 : 1, 162 : 2).	32·27	24·87	31·13	24·04	56·51	42·32	130	129	134	182	176
	Congenital defects (malformations and atelectasis) (159, 162 : 2).	*7·17*	*5·82*	*7·12*	*5·78*	*8·25*	*6·74*	*123*	*123*	*122*	*116*	*117*
	Congenital debility, sclerema and icterus (160)	*5·44*	*3·44*	*5·01*	*3·22*	*14·46*	*8·18*	*158*	*156*	*177*	*289*	*254*
	Premature birth (161 : 1) ..	*19·66*	*15·60*	*19·00*	*15·05*	*33·80*	*27·41*	*126*	*126*	*123*	*178*	*182*
	Other causes	10·64	7·90	9·98	7·25	24·76	21·86	135	138	113	248	302
	All causes	73·72	56·03	71·14	53·94	128·61	100·45	132	132	128	181	186

Male excess was, as usual, greater for legitimate than for illegitimate infants, and excess for the illegitimate over the legitimate greater for females. Both these related rules have applied in every year from 1906 onwards except in 1926, when both were broken. It is natural that when, as normally, the illegitimate status reacts more severely on the female (86 per cent. excess over the legitimate in 1928) than on the male (81 per cent. excess) the normal advantage of the female should be lessened for illegitimates. In each of the last 23 years, for which the comparison can be made, except 1926, illegitimacy has increased the mortality of female more than that of male infants, and in each, with the same single exception, male excess has, as in 1928, been greater for the mortality of the legitimate than the illegitimate. The total excess for the illegitimate of both sexes, 83 per cent. in 1928, was the lowest from 1906 onwards, except 78 in 1927. Since the war this excess has tended to fall from a ma ximum then attained for each sex.

Excess for the illegitimate is, as usual, very much greater for syphilis than for any other cause distinguished in the table.

Distribution throughout the country of Infant Mortality from various causes.—Table XVII, which is derived from Table 12, furnishes an analysis by cause of the differences in total mortality under one year of age shown in Tables V and VI.

Table XVII.—Comparison of Infant Mortality from the Principal Causes in different Classes of Area and Sections of the Country, 1928.

—	Measles (7).	Whooping Cough (9).	Tuberculosis, all forms (31–37).	Syphilis (38).	Convulsions (80).	Bronchitis and Pneumonia (99–101).	Diarrhœa and Enteritis (113).	Congenital Malformations (159).	Congenital Debility & Sclerema (160 : 1).	Premature Birth (161 : 1).	Injury at Birth (161 : 2).	Suffocation—in bed, or not stated how (180 pt.).	Other Causes.	All Causes.
Differences from Rates for England and Wales per 100,000 Live Births.														
All Areas—														
North	− 16	+ 46	+18	+ 30	+ 82	+321	+136	+ 36	+ 68	+222	+33	−12	+ 91	+ 1,055
Midlands	− 40	− 46	− 6	− 6	− 56	−253	−119	− 28	− 14	+ 13	−22	+ 7	− 81	− 651
South	+ 82	− 15	−16	− 25	−107	−168	− 13	− 40	− 96	−354	−15	+ 7	− 46	− 806
Wales	− 27	+ 34	− 9	− 22	+242	+188	− 75	+ 97	+ 80	+121	−10	+ 3	+117	+ 739
London	+255	+ 33	−13	− 13	−137	−242	+331	− 70	− 88	−346	−24	+31	+ 36	+ 237
County Boroughs—														
England and Wales	+ 10	+ 51	+19	+ 25	+ 19	+310	+229	+ 2	+ 5	+159	+22	− 1	+ 86	+ 936
North	+ 29	+ 97	+19	+ 43	+ 77	+581	+365	+ 21	+ 53	+293	+39	− 6	+147	+ 1,758
Midlands	− 9	+ 7	+17	+ 14	− 72	− 21	+141	− 3	− 28	+ 98	− 4	+ 4	− 21	+ 123
South	+ 21	− 53	+25	+ 31	− 56	− 94	−210	−108	−109	−350	+35	+16	− 13	− 927
Wales	−108	+ 28	+32	+ 9	+113	+250	+158	+ 47	− 97	+ 69	−40	−19	+341	+ 783
Other Urban Districts—														
England and Wales	− 42	− 34	− 2	—	+ 20	−154	−180	+ 8	+ 18	− 14	−16	− 7	− 62	− 465
North	− 69	− 23	+25	+ 33	+ 75	+129	−107	+ 23	+ 88	+135	+25	−17	+ 34	+ 351
Midlands	− 34	− 73	− 5	− 13	− 52	−311	−206	− 44	− 12	− 41	−44	+ 5	−110	− 940
South	− 54	− 32	−24	− 23	− 82	−547	−253	+ 27	−120	−354	−27	−21	−161	− 1,671
Wales	+ 30	+ 75	−33	− 18	+302	+261	−179	+118	+161	+240	−22	+ 3	+ 17	+ 955
Rural Districts—														
England and Wales	− 82	− 51	−26	− 34	+ 9	−408	−274	+ 22	+ 9	− 65	− 1	− 2	− 58	− 259
North	− 73	+ 2	+ 1	− 31	+114	−258	−214	+126	+ 79	+140	+24	−25	+ 5	− 110
Midlands	− 89	− 75	−38	− 22	− 43	−463	−321	− 38	+ 1	− 16	−11	+13	−105	− 1,207
South	− 88	− 72	−42	− 52	−106	−652	−337	− 8	− 75	−373	−15	−15	−117	− 1,952
Wales	− 60	− 27	− 1	− 50	+237	+ 27	− 74	+ 98	+ 75	− 34	+30	+19	+120	+ 360
Rates per cent. of those for England and Wales.														
All Areas—														
North	88	122	117	142	133	124	122	107	118	113	117	80	110	116
Midlands	71	78	94	92	77	81	81	94	96	101	88	112	91	90
South	159	93	85	65	57	87	98	92	75	80	92	112	95	88
Wales	80	116	92	69	198	114	88	120	121	107	95	105	113	111
London	285	116	88	82	44	118	153	86	77	80	87	153	104	104
County Boroughs—														
England and Wales	107	124	118	135	108	124	137	100	101	109	112	98	110	114
North	121	146	118	161	131	144	159	104	114	117	121	90	116	127
Midlands	93	103	116	120	71	98	123	99	93	106	98	107	98	102
South	115	75	123	56	77	93	66	78	72	80	118	127	99	86
Wales	22	113	130	113	146	119	125	110	75	104	79	68	138	112
Other Urban Districts—														
England and Wales	70	84	98	100	108	88	71	102	105	99	92	88	93	93
North	50	89	123	146	130	110	83	105	123	108	113	71	104	105
Midlands	75	66	95	82	79	76	67	91	97	98	77	108	88	86
South	61	85	78	68	67	58	59	105	69	80	86	64	82	74
Wales	122	135	69	75	223	120	71	124	142	114	88	105	102	115
Rural Districts—														
England and Wales	41	76	76	52	104	69	56	104	102	96	101	97	94	85
North	47	101	101	56	146	80	66	126	120	108	113	58	101	98
Midlands	36	65	65	69	83	65	48	92	100	99	94	122	88	81
South	36	66	61	27	57	50	46	98	81	79	92	75	87	70
Wales	57	87	99	30	196	102	88	120	119	98	116	132	113	106

The greatest departures from the average mortality of the whole country in Table 12 are furnished by the county boroughs of the North, with excesses under every cause distinguished,

except overlying, aggregating to 17·58 deaths per 1,000 live births, an excess of 27 per cent. over the rate for England and Wales, and by the rural districts of the South, with comparatively favourable experience under every head distinguished, yielding a total rate 30 per cent. lower than the general average.

As usual, each one of three causes contributes more than any other to these differences, the three being bronchitis and pneumonia, diarrhœa, and premature birth. This was the case also in each of the six preceding years, so the predominant influence of these causes in determining local variations of infant mortality is evident. Jointly they account in 1928 for 70 per cent. both of the divergence in the county boroughs of the North above the mean, and of that in the rural districts of the South below it. Much the most potent influence is that of bronchitis and pneumonia, which is always of chief importance, second place being taken sometimes by diarrhœa, as for the Northern county boroughs, and sometimes by premature birth, as for the Southern rural districts in Table XVII.

Mortality from bronchitis and pneumonia (considered jointly because of evidence of interchangeability between these forms of return) is very greatly and consistently in excess in the North of England, particularly in its great towns. During the last eleven years the Northern excess over the general average, 24 per cent. in 1928, has varied only between 24 and 41 per cent., while in the same period excess for the Northern county boroughs, 44 per cent. in 1928, has ranged from 31 to 57 per cent. Urbanization also is a powerful factor in promoting this, like most other forms of infant mortality. During each of the twelve years 1917–28 excess for the county boroughs has been recorded, varying from 11 to 28 per cent. (24 in 1928), while the rate for the rural districts has been as constantly below the mean, the difference ranging from 14 to 35 per cent. (31 in 1928). In the South this rural advantage generally amounts, as in 1928, to about 50 per cent.

The constancy of both these features of the distribution of respiratory mortality in infancy—increase from South to North and from the country to the great towns—is remarkable. The twelve years for which comparison can be made present no exception in any class of area to the rule of increase from South to North, nor, for the country at large, to that of increase from country to town.

While the mortality increases with urbanization at all stages of infancy, the difference between town and country becomes greater as age increases, the excess for the county boroughs and the advantage of the rural districts tending to be greatest at 9–12 months. London, on the other hand, generally returns its maximum excess of mortality from respiratory causes during the first four weeks of life, for which its total mortality experience is exceptionally favourable, and generally records a death rate below the average in later infancy.

Excess for the North over the South of England is greater for respiratory disease than for infant mortality in general. Its regularity is unfailing, none of the twelve years, 1917–1928, for which the comparison can now be made, failing to record excess for the North over the Midlands, and for the Midlands over the South, in each of the three classes of area distinguished. London, which from its position in the South should return a low rate, and from its maximum urbanization a high one, generally returns rates very similar to those for England and Wales, which were higher than those for London in ten, and lower in eight, of the 18 years 1911–28.

Mortality from diarrhœa increases from South to North in about the average degree applying to all causes generally. No exception to the rule has occurred for any class of area in any of the last twelve years. But the extent of its increase with urbanization is outstanding. During the last twelve years excess for the county boroughs (over England and Wales) has varied between 16 and 41 per cent., while the rates for the urban and rural districts have been uniformly below the general average, the former by 7 to 29, and the latter by 30 to 47 per cent. In eleven of these twelve years the lowest rate of all has been that for the rural districts of the South, which has ranged from 46 to 71 per cent. below average. London diarrhœa mortality is uniformly high, its excess over the general average having ranged during 1911–28 from 10 to 69 per cent. This excess is greatest at 3–6 months, the age of greatest diarrhœal mortality, at which age London excess has ranged during 1911–28 from 13 to 95 per cent. The latter excess is that recorded in Table 12 for 1928, 1919 coming next, with 90 per cent. The same year (1919) is also the only one of the 18 recording higher London rates than 1928 at 6–9 months, as well as being one of the only two by which the 1928 London rate has been exceeded at 9–12 and at 0–12 months. For infancy as a whole the London excess of 53 per cent. in 1928 is the highest from 1911 onwards, 1917 (56 per cent.) and 1919 (69 per cent.) excepted.

The third chief cause of local differences in infant mortality, premature birth, is almost restricted to the first four weeks of life, during which, in every year and in all classes of area, about 90 per cent. or more of such deaths occur. This form of mortality is more closely associated with geographical position than with urbanization, there being no exception in its case to the rule of increase from South to North in any class of area in any of the twelve years 1917–28. The rule of increase with urbanization, on the other hand, is often broken (twice in twelve years for England and Wales) as between the urban and the rural districts, being manifested chiefly in the form of excess for the county boroughs. These have returned the highest rate for the three classes of area in each of the twelve years in the Midlands as well as in England and Wales as a whole, but in the North, South, and Wales there have been several exceptions even to this application

of the rule, while the rate for the rural districts has frequently been higher than that for the urban in all sections of the country. The low London rates, which have varied from 75 to 94 per cent. of those for England and Wales, form another exception to the rule of increase with urbanization.

Next to prematurity, bronchitis and pneumonia, and diarrhœa, which in each of the last six years (Table 9) have ranked in this order as the principal causes of infant mortality, come, for 1928, congenital malformations, congenital debility, and convulsions. Excess for malformations over the two last mentioned causes is quite a new feature in our records, applying, for debility, only to the last two, and for convulsions, only to the last five years in Table 9. This has been brought about by gradual increase in mortality from malformations, and rapid decrease of that attributed to convulsions and debility. Certain features of the distribution of the latter two forms of return confirm the suggestion conveyed by their extremely rapid decrease (convulsions 6·97 to 2·46 and debility 9·82–3·87 in 1918–28, Table 9), that this decrease is largely attributable to decreasing vogue of these terms in certification of deaths similar in nature throughout this period.

Thus, ascription of death to convulsions is largely a matter of local usage. The practice is followed least in London, where the mortality so returned is less than half that for England and Wales, varying during 1917–28 from 33 to 54 per cent. of average, and most in the smaller towns and especially the rural districts of Wales, both of which usually return an excess of 100 per cent. or more over average, rising for the rural districts to 177 per cent. in 1927. The excess recorded in Table XVII for the Welsh urban over the Welsh rural districts is exceptional, no other instance having occurred during the twelve years for which this tabulation (Table 12) has been carried out. The convulsions rate is falling fast in all sections of the population, but even faster in London, where it is lowest, than in the Welsh rural areas, where it is highest. From 3·91 deaths per 1,000 births in London in 1917, it has fallen to 1·09 in 1928, a reduction of 72 per cent., while in the Welsh rural districts it has fallen from 15·89 in 1917 to 4·83 in 1928, or by 70 per cent.

The indefinite forms of return grouped under the heading congenital debility are also least met with in London certification, and most in that of the Welsh small towns. They are also much less used in the South of England than in the North. During each of the past twelve years the rates for the South of England as a whole have been below average to an extent varying from 13 to 30 per cent., those for the Midlands about average, and those for the North in excess of average to an extent varying from 6 to 26 per cent. This mortality also is falling rapidly in all parts of the country, but faster in London and the South, where it was already much lower, than in Wales and the North. There can be little

doubt that the fall under both convulsions and debility represents a change towards greater precision in the nomenclature of disease, in which London and the South of England are leading the way.

The rates for congenital malformations, which now hold fourth place in order of numerical importance amongst the causes of infantile death in Table 9, are more uniform in their incidence on the different sections of the population than those for most other causes of death. They show no tendency to increase with urbanization, and for 1928, indeed, are seen from Table XVII to have risen regularly from a minimum for London to a maximum in the rural districts. In general, however, the average is little departed from in any class of area, 9 per cent. below for the rural districts in 1919 being the greatest variation from the mean during 1917–28. Geographical comparison reveals definite excess for the North from this as from other causes, with slight and inconstant difference between the Midlands and South. As this form of mortality has been shown (Decennial Supplement, 1921, Part II, Page cl) to be associated with manual work on the part of the mothers and especially with the textile industry, the location of this industry in the North of England may be largely responsible for the excess shown in Table XVII, as in each of its eleven predecessors, for that part of the country.

Mortality at Ages over One Year.

Table XVIII gives the crude and standardized death-rates at all ages for sexes and persons for the whole country, as well as the mortality per million living at different ages, for 1927 and 1928, and, in order to provide means of comparison with the most recent pre-war experience, for 1911–14.

Table XVIII.—England and Wales: Mortality from all Causes per Million Population, 1911–14, 1927, and 1928. (Total deaths registered.)

	Males.			Females.			Persons.		
	1911–14.	1927.	1928.	1911–14.	1927.	1928.	1911–14.	1927.	1928
All Ages:									
Crude	14,890	13,115	12,465	13,065	11,618	10,922	13,948	12,334	11,661
Standardized { A	14,841	11,810	11,104	12,260	9,552	8,900	13,475	10,607	9,931
Standardized { B	15,911	12,839	12,079	13,713	10,993	10,234	14,779	11,878	11,120
0–..	40,588	23,729	21,943	33,917	18,898	17,359	37,270	21,340	19,675
5–..	3,304	2,437	2,419	3,255	2,226	2,236	3,279	2,332	2,329
10–..	1,972	1,572	1,685	2,055	1,526	1,537	2,014	1,549	1,611
15–..	2,942	2,520	2,589	2,683	2,423	2,376	2,811	2,471	2,483
20–..	3,721	3,270	3,129	3,200	2,963	2,975	3,450	3,115	3,051
25–..	4,912	3,800	3,672	4,057	3,443	3,262	4,464	3,607	3,452
35–..	8,033	6,588	6,006	6,437	4,856	4,572	7,205	5,649	5,227
45–..	14,808	11,894	11,247	11,363	8,706	8,131	13,018	10,210	9,593
55–..	29,767	24,548	23,292	22,471	18,274	17,084	25,905	21,253	20,028
65–..	62,844	61,144	57,837	50,722	47,435	44,289	56,124	53,606	50,383
75–..	135,490	141,745	130,050	114,126	118,452	105,980	122,694	127,671	115,560
85 and upwards	271,337	309,043	287,713	237,360	285,796	262,525	249,201	293,552	270,931

A. English Standard (Population of England and Wales, 1901). B. International Standard. (*See* page 1.)

At all ages under 85 the mortality of each sex is lower than it was before the war, and at all over 25 than in 1927. At all ages jointly the crude rate has fallen by 16·4 per cent. below the pre-war figure, but when allowance is made by standardization for increased age of the population the extent of the fall is increased to 26·3 per cent. (standard A) or 24·8 (standard B). It is a little greater for females than for males. Of the two standards used in the table the English (A) shows a rather greater fall than the International (B), because it gives less weight to the higher ages, at which reduction has been least. This difference between the two would be greater were it not that the English standard gives less weight also to mortality at 0–5, at which the fall has been greatest. The extent of the fall at the various ages distinguished can be better appreciated from Table XIX, in which the mortality in 1926, 1927 and 1928 of each sex and age group is shown as a proportion of the corresponding rate for 1911–14.

The fall is much greater at 0–5 than at any later period of life, amounting in 1928 to about 46 per cent. for males and 49 per cent. for females. Thereafter it very rapidly decreases with advancing age up to early maturity, reaching a minimum of 12 per cent. for males at 15–20 and of 7 per cent. for females at 20–25.

Table XIX.—England and Wales: Mortality at various ages from all causes in 1926, 1927 and 1928 per cent. of that for the same sex and age in 1911–14.

	Males.			Females.			Both Sexes.		
	1926.	1927.	1928.	1926.	1927.	1928.	1926.	1927.	1928.
All Ages:									
Crude	83·2	88·1	83·7	83·5	88·9	83·6	83·3	88·4	83·6
Standardized A	75·7	79·6	74·8	74·2	77·9	72·6	74·9	78·7	73·7
Standardized B	76·8	80·7	75·9	76·1	80·2	74·6	76·4	80·4	75·2
0— ..	58	58	54	55	56	51	57	57	53
5— ..	77	74	73	71	68	69	74	71	71
10— ..	77	80	85	71	74	75	74	77	80
15— ..	84	86	88	89	90	89	86	88	88
20— ..	83	88	84	92	93	93	87	90	88
25— ..	75	77	75	82	85	80	78	81	77
35— ..	76	82	75	72	75	71	74	78	73
45— ..	75	80	76	72	77	72	73	78	74
55— ..	78	82	78	77	81	76	78	82	77
65— ..	90	97	92	87	94	87	89	96	90
75— ..	98	105	96	95	104	93	96	104	94
85— ..	104	114	106	107	120	111	106	118	109

After this age another period of increasing decline sets in, which reaches its maximum of 25 per cent. for males at 25–45 and of 29 per cent. for females at 35–45. Thereafter the decrease recorded becomes steadily less for each sex, till at ages over 85 it disappears altogether. The relative smallness of the decline for females at 20–25 is mainly due to tuberculosis. At this age tuberculosis mortality has declined by 21 per cent. for males and increased by 0·6 per cent. for females, whereas mortality from other causes has decreased by 13 per cent. for both males and females. Even from causes other than tubercle however the decline in youth (10–25) is less than in middle age or in childhood.

The following table shows that reduction of mortality since 1911–14 has been on the whole of similar type as regards age distribution for tuberculous and non-tuberculous causes. For males the fall has been greater from tuberculosis at every age, and for females at all but 15–35, three age groups at which reduction of tuberculosis mortality has been inconsiderable for females, and at which alone, under 75, it is less than that for males. But for each sex this is the age, old age excluded, of least reduction both for tuberculous and non-tuberculous causes (15–35 tuberculosis, and 10–25 other causes); and for each the reduction is, broadly speaking, similar in type of age incidence for tuberculous and non-tuberculous causes. The chief difference occurs at age 5–10, at which mortality from tubercle has fallen almost by one-half, and that from other causes only by a quarter.

Table XX.—England and Wales: Mortality at various Ages from Tuberculosis and from other causes in 1927 and 1928 per cent. of that for the same sex and age in 1911–14.

	Tuberculosis.						Other Causes.					
	Males.		Females.		Both Sexes.		Males.		Females.		Both Sexes.	
	1927.	1928.	1927.	1928.	1927.	1928.	1927.	1928.	1927.	1928.	1927.	1928.
All Ages :												
Crude ..	70	67	70	67	70	67	90	86	91	85	90	85
Standardized	68	65	71	68	69	66	81	76	79	73	80	75
0— ..	47	42	45	41	46	42	59	55	56	52	58	53
5— ..	57	56	56	52	56	54	77	77	71	73	74	75
10— ..	58	59	60	58	59	58	86	93	81	83	84	89
15— ..	83	82	97	97	91	90	87	91	85	81	86	87
20— ..	80	79	103	101	91	90	93	87	84	87	89	88
25— ..	73	71	86	81	79	76	80	77	85	80	82	78
35— ..	73	68	63	58	68	63	85	77	79	75	82	76
45— ..	73	67	59	54	67	62	82	78	79	74	80	76
55— ..	59	59	59	55	59	58	84	80	82	77	84	79
65— ..	66	64	61	61	64	63	98	93	94	88	96	90
75— ..	76	63	70	71	73	67	105	97	106	96	106	96

Such correspondence of result suggests some correspondence of cause, either in the form of wholesale return of deaths really due to tuberculosis under other causes, of which there is no evidence, or of relatively diminished vitality in youth. If for some reason increase of resistance to disease has been less at 15–35 than at other non-senile ages this would explain why reduction of mortality should be less both from tuberculosis and from other causes at these than at other ages, or even, as for females of 20–25 in the case of tuberculosis, absent altogether. At this age the tuberculosis death-rate for females has changed very little during the last quarter of a century, having been 1,420 per million in 1903 (1,401 in 1905) as compared with 1,397 in 1928. It had fallen very rapidly during the second half of last century, from 4,430 in 1851–60 to 1,788 in 1891–1900, the fall continuing steeply up to 1903, after which it suddenly ceased.

Decline in non-tuberculous mortality of females of this age was not so abruptly checked at the commencement of the century as that in tuberculous, but for each sex the fall has been much less steep since than before the year, 1903, marking for females the abrupt change from rapid fall of tuberculous mortality to a stationary condition. So although the contrast is chiefly in evidence for tuberculosis amongst females, it may be noted also for other causes in both sexes.

Of the two sexes, males suffered the higher mortality at every age. Table 3 shows definite excess of mortality for males both in 1927 and 1928 at each age distinguished. This had never occurred before, though in four previous years, 1915, 1923, 1925 and 1926, there was in fact some excess for males at each age, even though too slight to be shown in this table. Excess for males at all stages of life, only recorded for two previous years, 1915 and 1923, has now therefore occurred in each of the last four years 1925–1928, as well as in two earlier.

Mortality at ages 0–5 (Table XVIII) is very imperfectly measured during recent years by the crude rate for all these ages jointly. When the birth-rate is falling fast, as during the war and since 1920, the proportion to the whole group aged 0–5 of infants under one year of age is abnormally low, and the crude death-rate of the group tends to fall merely because of the small effect of the high mortality of these infants in consequence of their small numbers. When the birth-rate rises, the opposite effect is produced, and allowance by standardization for these changes in the composition of the population at risk increases the death-rate in the first case, and reduces it in the second.

Table XXI measures the effect of this influence of changes in the birth-rate upon the mortality of early life immediately before the war and from 1917 onwards. It shows that in all these years the fall of the birth-rate has caused some under-statement of mortality at 0–5 for each sex except during the three years 1920–22, when its temporary rise after the war reversed the process. The fall of 47 per cent. shown for this mortality in Table XIX is seen to be slightly overstated from this cause, being reduced to 44 per cent. when allowance is made for its influence. But this influence, which was greatest during the years 1918–21, in the first of which it converted an actual increase of mortality by 7 per cent. (as compared with 1911–14) into an apparent decrease by 2 per cent., has now been reduced to much smaller dimensions, and will presumably require less consideration in future years unless the course of the birth-rate is again suddenly changed. The crude rate, as recorded in Table 3, now again provides a measure of the movement of this mortality sufficiently accurate for practical purposes. It shows that recent rates are quite without parallel in the past, no quinquennium before 1911–15 returning less than double the rate for 1928.

Table XXI.—England and Wales: Comparison of Crude and Standardized Death-Rates per 1,000 living at Age 0–5, 1911–14 and 1917–28.

——	Males.		Females.		Both Sexes.	
	Crude.	Stand-ardized.	Crude.	Stand-ardized.	Crude.	Stand-ardized.
1911–14 ..	40·6	40·8	33·9	34·2	37·3	37·5
1917	31·8	34·3	26·3	28·4	29·1	31·4
1918	38·9	43·1	34·1	37·5	36·5	40·3
1919	32·8	36·6	26·4	29·5	29·6	33·1
1920	36·2	31·8	28·8	26·0	32·5	29·0
1921	32·3	29·2	25·8	23·6	29·1	26·4
1922	30·2	28·5	24·5	23·1	27·4	25·8
1923	24·3	25·0	19·6	20·1	22·0	22·5
1924	25·1	27·3	20·2	21·8	22·6	24·6
1925	25·3	27·1	20·7	22·1	23·0	24·6
1926	23·3	24·9	18·8	20·0	21·1	22·4
1927	23·7	25·2	18·9	20·0	21·3	22·6
1928	21·9	23·3	17·4	18·5	19·7	20·9

Mortality at 1–5.—The causes of the great decline in mortality at 0–5 recorded in Table XIX have been for the most part already dealt with, as 68 per cent. of deaths under 5 in 1928 occurred in the first year of life. But, as shown by Table XXII, mortality is falling even more rapidly of late in the years immediately following infancy than in the first year of life itself, so the features of the changes in progress at these ages also seem to call for some consideration.

Table XXII shows the extent to which each of the years 1–5 has shared with the first year of life in the fall, since the most recent pre-war experience, of 47 per cent. at all ages 0–5 jointly (Table XIX). This fall is seen to be greater for each year 1–5 than in infancy, whether comparison be made with 1927 or with 1911–14.

Table XXII.—England and Wales.—Mortality per 1,000 living (both sexes) in each of the first Five Years of Life, 1911–14, 1927, and 1928.

Year of Life.	1911–14.	1927.	1928.	1928 per cent. of	
				1911–14.	1927.
0–1	118·16	71·24	69·03	58·4	96·9
1–2	34·06	19·70	16·19	47·5	82·2
2–3	13·68	8·56	7·15	52·3	83·5
3–4	8·32	5·17	4·39	52·8	84·9
4–5	6·14	3·85	3·50	57·0	90·9
0–5 Crude ..	37·27	21·34	19·68	52·8	92·2
0–5 Stand ..	37·52	22·57	20·91	55·7	92·6
1–5 Crude ..	15·62	9·22	7·72	49·4	83·7
1–5 Stand ..	15·54	9·31	7·80	50·2	83·8

The distribution throughout the country of mortality at these ages is shown in Table XXIII, which may be compared with Tables V and VI (Infant Mortality). The greatest excess over the general average recorded in Table XXIII is one of 48 per cent. for the county boroughs of the North at 1–2 years, while the most favourable position occupied by any of the populations compared is that of 43 per cent. below the general average by the rural districts of the South at the same age.

Table XXIII.—Distribution of Mortality in Early Childhood, 1928.

	1—2 years.					2—5 years. (Mean Annual Mortality.)				
	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.
Deaths per 1,000 Living (Both Sexes).										
London	—	—	22·55	—	22.55	—	—	5·71	—	5·71
County Boroughs	24·00	15·53	13·89	13·72	19·83	6·39	4·81	4·71	4·77	5·64
Other Urban Districts ..	15·50	12·51	10·74	18·13	13·72	5·42	4·24	3·95	5·75	4·75
Rural Districts	14·24	9·33	9·16	10·97	10·62	4·80	3·45	3·35	4·90	3·90
All Areas	19·94	12·72	15·91	15·03	16·19	5·85	4·23	4·72	5·30	5·00
Mortality per cent. of that in England and Wales.										
London	—	—	139	—	139	—	—	114	—	114
County Boroughs	148	96	86	85	122	128	96	94	95	113
Other Urban Districts ..	96	77	66	112	85	108	85	79	115	95
Rural Districts	88	58	57	68	66	96	69	67	98	78
All Areas	123	79	98	93	100	117	85	94	106	100
Mortality per cent. of that in England and Wales in the same class of Area.										
County Boroughs	121	78	70	69	100	113	85	84	85	100
Other Urban Districts ..	113	91	78	132	100	114	89	83	121	100
Rural Districts	134	88	86	103	100	123	88	86	126	100

The differences in mortality between the populations compared are greater at 1–2 than at 2–5 years, and greater at the latter age than in the first year of life (Table VI).

As Table XXIV of the Review for 1926, and similar tables for other years, show that mortality varies more with environment at 0–5 than at any later age, it follows from Table XXIII that environmental influence is at a maximum, as usual, in the second year of life. This accords with the fact demonstrated by Table XXII, that mortality is falling faster at this than at any other age. It is naturally being prevented most at the age at which it is most preventable.

At both 1–2 and 2–5 years the general type of mortality distribution is the same as that persistently maintained for infant mortality, and illustrated by Tables V and VI. No exception to the rule of decrease from North to South occurs for any class of area at either age dealt with.

The lower section of the table shows that the Northern excess, both at 1–2 and at 2–5, was highest in the rural districts. The advantage of the South, on the other hand, was greatest in the county boroughs and least in the rural districts at 1–2 years.

Both of these observations apply with great regularity year after year, though at 2–5 the type of comparison is less fixed, the Southern advantage in 1928 for instance being greatest at this age in the smaller towns, not the county boroughs.

The chief causes of death at ages 1–5 are set forth in Table XXIV, which also provides comparison with 1927 and with 1911–14.

The table enables us to ascertain the causes responsible for decrease of this mortality in 1928 (to a point 8 per cent. below its previous minimum in 1926).

These are chiefly respiratory disease, influenza, and whooping cough. The total fall of 1,504 deaths per million as compared with 1927 is seen to have been distributed by cause as follows :— bronchitis and pneumonia 1,089, influenza 372, whooping cough 171, tuberculosis of the nervous system 70, meningitis 37 and convulsions 34, the total fall of 1,773 from these causes being partially offset by increases from measles of 172, diphtheria 56, violence other than burns 45, rickets 22, and diarrhoea 10. Thus comparative freedom from influenza and whooping cough, with their respiratory consequences, accounts for the favourable experience of 1928, despite increase by 18 per cent. in mortality from measles. In the Review for 1927 the increase in that year of mortality at 1–5 was ascribed solely to influenza (including its respiratory consequences), so it is natural that the corresponding result in 1928 should have accompanied reduction of the influenza rate to its lowest level at this age since the great epidemic of 1918–19. Influenza and violence other than burns and scalds are the only causes returning a higher rate in 1928 than in 1911–14, since when that for all causes has been reduced by just over 50 per cent.

Table XXIV.—England and Wales : Deaths from Various Causes per Million living at Ages 1–5 Years in 1911–14, 1927, and 1928. (Both Sexes.)

Cause of Death.	Death-rate.			Cause of Death.	Death-rate.		
	1911–14.	1927.	1928.		1911–14.	1927.	1928.
7. Measles	2,673	950	1,122	98: 2. Laryngitis	152	45	43
8. Scarlet Fever	373	90	92	99. Bronchitis	872	391	300
9. Whooping Cough ..	1,216	743	572	100. Broncho-pneumonia	2,170	2,386	1,533
10. Diphtheria	781	448	504	101. Pneumonia (Lobar and not otherwise defined).	866	562	417
11. Influenza	60	468	96	Other Respiratory Diseases	140	79	73
31. Tuberculosis of Respiratory System.	237	143	117	112 : 1 Inflammation of the Stomach.	94	31	33
32. Tuberculosis of Nervous System.	705	448	378	113 & 114. Diarrhœa and Enteritis.	1,639	358	368
33. Tuberculosis of Intestines and Peritoneum.	391	132	127	128. Acute Nephritis ..	89	39	41
34–37. Other Tuberculous Diseases.	288	143	134	159. Congenital Malformations.	85	74	75
56. Rickets	172	80	102	179. Burns and Scalds ..	360	242	234
71. Meningitis	451	157	120	Other Violence	274	239	284
80. Convulsions	460	133	99	Other Causes	1,071	839	855
				All Causes	15,619	9,221	7,717

The characteristic infections of childhood, represented by Nos. 7–10 in Table XXIV, play a specially important part in mortality at this age, which is therefore much affected by the

degree of their epidemic prevalence. In 1928 these four causes accounted for 30 per cent. of the total deaths, as against 24 in 1927, their aggregate death-rate increasing from 2,231 per million to 2,290, so the progress achieved in 1928 cannot be ascribed to good fortune in this respect.

Mortality of the Aged.—The rapid increase at the present time of the relative importance of this section of the population has been already pointed out (page 2). In 1911 persons over 70 years of age were 297 per 10,000 at all ages, in 1921, 344, and for 1928 they are estimated at 388 per 10,000. Whereas Table LXXXIV indicates an increase, since 1921, of 37 per 1,000 at ages under 70, that shown for ages over 70 is 175 per 1,000.

Table XXV.—England and Wales: Mortality over 70 Years of Age in 1911–20, 1921–25, 1926, 1927, and 1928, from the Chief Causes of Death.

	Deaths from each Cause per 1,000 Total Deaths.					Mortality per 1,000 Living.				
	1911–20.	1921–25.	1926.	1927.	1928.	1911–20.	1921–25.	1926.	1927.	1928.
MALES.										
Influenza (11)	20	25	16	41	12	2·3	2·7	1·7	4·7	1·3
Cancer (43–49)	81	101	111	107	116	9·4	11·0	11·7	12·3	12·5
Heart Diseases (87–90)	149	169	194	201	229	17·2	18·4	20·5	23·1	24·6
Disease of Blood Vessels, including Cerebral Hæmorrhage (74, 91–93)	147	184	198	194	211	16·9	20·1	20·8	22·4	22·8
Bronchitis (99)	137	127	110	111	82	15·9	13·9	11·6	12·8	8·9
Pneumonia (100, 101)	34	35	33	36	32	4·0	3·9	3·5	4·2	3·5
Chronic Nephritis (129)	29	27	26	28	33	3·3	2·9	2·8	3·2	3·6
Old Age (164)	223	168	148	122	111	25·7	18·3	15·6	14·1	11·9
Other Causes	180	164	164	160	174	20·8	17·9	17·3	18·3	18·7
All Causes	1,000	1,000	1,000	1,000	1,000	115·5	109·2	105·5	115·1	107·7
FEMALES.										
Influenza (11)	24	30	19	50	14	2·3	2·8	1·8	5·0	1·3
Cancer (43–49)	87	100	111	102	115	8·7	9·6	10·2	10·3	10·7
Heart Diseases (87–90)	154	186	210	222	256	15·2	17·8	19·4	22·4	23·7
Disease of Blood Vessels, including Cerebral Hæmorrhage (74, 91–93)	139	167	182	177	193	13·7	16·0	16·8	17·8	17·9
Bronchitis (99)	149	137	113	119	86	14·8	13·1	10·4	12·0	7·9
Pneumonia (100, 101)	32	35	33	34	30	3·2	3·3	3·1	3·5	2·8
Chronic Nephritis (129)	21	20	22	23	27	2·1	1·9	2·0	2·3	2·5
Old Age (164)	249	194	176	148	136	24·6	18·5	16·2	14·9	12·6
Other Causes	145	131	134	125	143	14·4	12·5	12·2	12·7	13·2
All Causes	1,000	1,000	1,000	1,000	1,000	99·0	95·7	92·1	100·8	92·6
PERSONS.										
Influenza (11)	22	27	18	46	13	2·3	2·8	1·7	4·9	1·3
Cancer (43–49)	85	100	111	104	116	9·0	10·2	10·9	11·1	11·4
Heart Diseases (87–90)	152	179	203	212	243	16·0	18·1	19·8	22·7	24·1
Disease of Blood Vessels, including Cerebral Hæmorrhage (74, 91–93)	142	175	189	184	201	15·1	17·7	18·5	19·7	19·9
Bronchitis (99)	144	133	112	116	84	15·2	13·4	10·9	12·3	8·3
Pneumonia (100, 101)	33	35	33	35	31	3·5	3·5	3·2	3·8	3·1
Chronic Nephritis (129)	24	23	24	25	30	2·6	2·3	2·3	2·7	3·0
Old Age (164)	237	182	163	136	125	25·0	18·4	16·0	14·5	12·3
Other Causes	161	146	147	142	157	17·0	14·7	14·3	15·0	15·5
All Causes	1,000	1,000	1,000	1,000	1,000	105·8	101·2	97·6	106·7	98·9

The mortality of the aged was relatively low in 1928. Table 3 shows that both at 65–75 and 75–85 the rate for each sex was lower than in any quinquennium since the commencement of registration, while the number of single years recording lower rates at these ages varies from one (1920) for females aged 75–85 to four for males aged 65–75. These, indeed, are the only instances of the kind on record, as prior to 1888, the first single year dealt with in Table 3, mortality as low as that of 1928 had never been returned for either sex at either of these ages. The case is different at 85–, for which the mortality of 1928 was relatively high as judged by recent standards, exceeding, for each sex, that of all quinquennia from 1896–1900 onwards, though all earlier quinquennial rates were higher. But deaths over 85 form a very small proportion of the total at ages over 65, 11·4 per cent. in 1928 (8·6 for males and 13·9 for females).

The causes to which death at ages over 70 is chiefly assigned are set forth in Table XXV.

The reduction in 1928 is seen to be accounted for by influenza and respiratory disease, reflecting the absence of adverse epidemic conditions, and from "old age," the rate ascribed to which has been steadily falling for many years. The combined rate for these causes has fallen from 35·5 to 25·0 per 1,000, whereas that for all other causes jointly has risen from 71·2 to 73·9. As the decrease for "old age" is no doubt balanced by increase for other more definite causes of death, and as that for respiratory disease must be in great measure dependent on that from influenza, it may be said that the favourable mortality experience of old age in 1928 has resulted from the favourable influenza experience of the year. Of the causes showing increase of mortality in 1928, Bright's disease, 11 per cent., and heart disease, 6 per cent., rank first, with a 3 per cent. increase for cancer, 1 per cent. for diseases of the blood vessels, and 3 per cent. for miscellaneous causes. As compared with 1911–20 1928 records an increase of 51 per cent. for heart disease, 32 for diseases of blood vessels, 27 for cancer, and 15 per cent. for chronic nephritis, with decreases under other headings. The increase for heart disease has been shown in the Review for 1926 (pp. 90, 91) to be wholly illusory, being due entirely to change of terminology as applied to the causes of senile death, and that from diseases of the blood vessels is probably (*id.* p. 86) largely of the same nature. *See* also p. 101, 1928. These causes are rapidly absorbing the "old age" of earlier certification, and the same may be largely true of the increase from cancer.

Centenarians.—Among the deaths registered during the year there were 84 of reputed centenarians, 13 of whom were males and 71 females. In the preceding three years the numbers were 92, 88 and 84 respectively. Particulars of the ages returned and of the classes of area concerned are given in Table XXVI.

Table XXVI.—England and Wales : Age at Death of Centenarians, 1928.

	Males.								Females.							
	100 and over	100.	101.	102.	103.	104.	105.	106.	100 and over	100.	101.	102.	103.	104.	105.	106.
London	2	1	1	—	—	—	—	—	5	1	4	—	—	—	—	—
County Boroughs	2	—	2	—	—	—	—	—	19	11	5	2	1	—	—	—
Other Urban Districts	5	5	—	—	—	—	—	—	26	11	6	5	1	1	2	—
Rural Districts ..	4	4	—	—	—	—	—	—	21	11	6	2	1	—	1	—
All Areas ..	13	10	3	—	—	—	—	—	71	34	21	9	3	1	3	—

CAUSES OF DEATH.

The causes of death of males and females at 18 groups of ages are stated in Table 17 for the whole country, for London, for county boroughs in the aggregate, for other urban districts in the aggregate, and for rural districts in the aggregate; and in Table 17A further detail of age is shown for all causes of significance at ages 0–5. In Table 18 deaths from each cause distinguished are tabulated by month of occurrence and by sex, but not by age. This table differs from all others in referring to date of occurrence and not of registration. So far as they relate to the whole country these tables include all deaths, but deaths of non-civilians are excluded from all tables relating to portions of the country (*see* page 1). The causes and ages for non-civilians are stated in Table 19 for the country as a whole. Table 17 includes the full International List of causes of death, as revised in 1920. Certain of the numbered items in it are subdivided, and where this occurs the letters (*a*), (*b*), &c., indicate subdivisions in international use, and numbers (1), (2), &c., subdivisions made without international agreement. All other abstracts of the causes of death are arranged in the form of the short list of causes adopted by the Registrar-General in consultation with the Ministry of Health for use during 1921–30. The relation of this list to the detailed and condensed International Lists, as revised by the International Commission which met for the purpose at Paris in 1920, is as follows :—

	Short List of Registrar-General.	Corresponding Number.	
		Detailed International List.	Abridged International List.
1	Enteric fever	1	1
2	Small-pox	6	4
3	Measles	7	5
4	Scarlet fever	8	6
5	Whooping cough	9	7

	Short List of Registrar-General.	Corresponding Number	
		Detailed International List.	Abridged International List.
6	Diphtheria	10	8
7	Influenza	11	9
8	Encephalitis lethargica	23	12 pt.
9	Meningococcal meningitis	24	12 pt.
10	Tuberculosis of respiratory system	31	13
11	Other tuberculous diseases	32–37	14 & 15
12	Cancer, malignant disease	43–49	16
13	Rheumatic fever	51	37 pt.
14	Diabetes	57	37 pt.
15	Cerebral hæmorrhage, &c.	74 & 75*a*	18 pt. 37 pt.
16	Heart disease	87–90	19
17	Arterio-sclerosis	91*b*	37 pt.
18	Bronchitis	99	20 & 21
19	Pneumonia (all forms)	100 & 101	22 & 23 pt.
20	Other respiratory diseases	97, 98 & 102–107	23 pt.
21	Ulcer of stomach or duodenum	111	24 pt.
22	Diarrhœa, &c. (under 2 years)	113	25
23	Appendicitis and typhlitis	117	26
24	Cirrhosis of liver	122	28
25	Acute and chronic nephritis	128 & 129	29
26	Puerperal sepsis	146	31
27	Other accidents and diseases of pregnancy and parturition	143–145 & 147–150	32
28	Congenital debility and malformation, premature birth	159–161	33
29	Suicide	165–174	36
30	Other deaths from violence	175–203	35
31	Other defined diseases	2–5, 12–22, 25–30, 38–42, 50, 52–56, 58–73, 75*b*–86, 91*a*, 91*c*–96, 108–110, 112, 114–116, 118–121, 123–127, 130–142, 151–158, 162–164	2, 3, 10, 11, 12 pt., 17, 18 pt., 24 pt., 25 bis, 27, 30, 34, & 37 pt.
32	Causes ill-defined or unknown	204 & 205	38

The contents of every heading in both the short and the detailed list now in use are defined in the Registrar-General's "Manual of the International List of Causes of Death" (1920 Revision),* which should be consulted in all cases where it is desired to ascertain the precise significance of any heading in the lists.

In Table 20 deaths of civilians are shown for different classes of area in various sections of the country, for urban and rural portions of administrative counties, and for county and metropolitan boroughs, arranged by sex, age, and the short list of causes as above. For other administrative areas of over 10,000 population in 1921 deaths of civilians are shown in Table 21, arranged by sex and short list of causes, but without distinction of age.

* Copies may be obtained from H.M. Stationery Office. Price 2*s.* net.

In addition to the above tables, which relate exclusively to the year 1928 (except Table 18, which deals with the twelve months Oct. 1927–Sept. 1928), Table 4 contains a statement of the number of deaths registered in each year 1918–28 from each cause distinguished in Table 17, so far as available, with distinction of sex but not of age ; while Table 5 states the corresponding crude death-rates per million living for persons, males, and females, so far as these can be regarded as of any significance. Similar tables (Nos. 8 and 9) state the mortality during the same eleven years of infants under one year of age from the causes of chief importance at that age, but without distinction of sex.

1. **Enteric Fever.**—The number of deaths classified to this heading during 1928 was 438. Of these, 100, or 23 per cent., were ascribed to paratyphoid infection, as against only 6, or 0·25 per cent., in 1911, the first year for which the information is available.

The standardized mortality (Table 6) corresponding to these deaths, 11 per million persons living (11 for males and 10 for females), though higher than in any of the three preceding years, is lower than for any year before 1925.

Table 6 shows that this is less than half the rate recorded for any year prior to 1919, and only about one-thirtieth of those prevalent sixty years ago, when these deaths were first distinguished in the tabulation.

The history of this remarkable fall is recorded in Table 6, with allowance by standardization for changes in the type of population at different periods, but mortality from this cause is little affected by standardization, the crude rate (Table 5), for each year from 1920 on being the same as the standardized (Table 6). The rapid fall which set in after 1899 continued till 1919, a rate of 15 per million in the latter year contrasting with 198 in the former. Since 1919, the reduction, proportionately as well as absolutely, has been much less, and in 1928, for the first time since 1924, an increase is recorded.

The peak in 1899 corresponded with a period of heavy diarrhœal mortality (Table III), and marked the close of a phase of stationary or even increasing rates for enteric fever during the 14 years 1886–1899, before which decline had been rapid. The fall since 1899 has been interrupted several times by increases for a single year only, of which the chief, in 1911, corresponded with a similarly temporary increase in diarrhœal mortality. Of late years this association has become less obvious, though increases for both diseases coincided again in 1921. From both, moreover, the mortality of the last 10–15 years has remained at an unprecedentedly low level.

The distribution of this mortality throughout the country is outlined in Table XXVII.

Table XXVII.—Enteric Fever, 1928 : Mortality per Million Civilian Population.

Class of Area.	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	11	—	11
County Boroughs ..	9	8	15	9	9
Other Urban Districts	13	12	10	10	12
Rural Districts ..	13	15	12	7	13
All Areas	11	11	11	9	11

The highest rates for 1928 are seen to be those of the county boroughs of the South and rural districts of the Midlands. This is the first year since this form of tabulation began in 1911 that amongst the three sections of England distinguished the highest place in the table has not been held by the North (thirteen times by its urban districts and four by its rural). But the southern county boroughs have frequently, and the Midland rural districts in two previous years, returned rates above the general average. The general type of distribution appears to be definitely changing from urban to rural, for whereas in each year 1911–16 the mortality of the rural districts was below the general average it has been above it in most subsequent years (eight out of twelve). This moreover is the first of the eighteen years compared in which the rate for the North of England as a whole has not exceeded that for the rest of the country. But the diminution of the Northern excess has been progressive since in 1911–14, and again in 1920, the Northern rate was double that of either of the other sections of England compared. The general tendency of recent years seems, indeed, to be towards approximation at a low level of all the rates compared in this table. That for London, for instance, which in 1911 was less than half the general average, is this year equal to it and has once (1925) even exceeded it.

Table 23 shows that prevalence of the disease was much the same as in 1927, the increased mortality of the year being explained by increase of fatality from 103 to 124 deaths per 1,000 notified cases (Table XXIX). Prevalence fell rapidly from 0·38 notified cases per 1,000 population in 1911, when the record commences, to 0·06 in 1922, since when it has again increased to some extent. It is much higher in the South of England than in the North, whereas fatality is far lower (Table XXVIII). This was the case also in 1925–1927, with a tendency to the same distribution, though less regularly manifested, in the five preceding years, for which alone the comparison can be made. In each of these nine years fatality was highest in the North of England, and in five of them lowest in the South. There is therefore a tendency in the case of enteric fever to the distribution characteristics of diphtheria, for which the fatality is consistently highest in the North, and prevalence in the

South, presumably owing to notification of a larger proportion of mild cases in the South. The distribution shown in Table XXVIII for prevalence of and fatality from enteric fever may be due in some measure to the same cause. This surmise is confirmed by examination of the notifications of paratyphoid fever in the sections of the country. Of these there were in all 1,093, 139 in the North, 317 in the Midlands, 607 in the South, 18 in Wales,

Table XXVIII.—Enteric Fever, 1928 : Prevalence and Fatality.*

Class of Area.	Cases per 1,000,000 Population.					Deaths per 1,000 Cases notified.				
	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	139	—	139	—	—	82	—	82
County Boroughs	52	54	131	46	61	176	151	111	192	154
Other Urban Districts ..	72	95	152	52	95	179	124	64	194	121
Rural Districts	86	108	104	49	96	155	138	111	146	134
All Areas	63	85	135	50	89	173	134	85	179	125

* Excluding non-civilian cases and deaths but including cases in Port Sanitary Districts.

Table XXIX.—England and Wales : Fatality of certain Infectious Diseases (Deaths per 1,000 Notified Cases), 1911–28.*

Year.	1. Enteric Fever.	6. Small-pox.	8. Scarlet Fever.	10. Diphtheria.	21. Erysipelas.	22. Poliomyelitis.	23. Encephalitis Lethargica.	24. Meningococcal Meningitis.
1911 ..	174	78·0	18·1	103	39	?	?	?
1912 ..	191	73·2	18·6	96	39	?	?	?
1913 ..	182	87·0	16·1	88	35	283	?	1,089
1914 ..	194	61·5	17·2	99	42	348	?	1,257
1915 ..	199	141·3	18·6	107	46	331	?	630
1916 ..	174	113·2	17·8	101	39	270	?	656
1917 ..	205	333·3	15·3	100	43	469	?	663
1918 ..	201	30·8	20·5	106	47	1,004	?	673
1919 ..	147	77·6	14·7	90	42	297	533	727
1920 ..	171	114·1	12·0	81	52	404	539	911
1921 ..	158	15·9	9·5	72	55	314	493	1,007
1922 ..	191	27·7	12·7	78	53	352	742	1,047
1923 ..	140	2·8	11.6	68	50	185	517	934
1924 ..	120	3·5	10·5	60	52	183	279	746
1925 ..	139	1·7	10·8	58	57	370	520	876
1926 ..	133	1·8	8·3	59	55	181	583	926
1927 ..	103	3·2	6·8	52	56	203	713	911
1928 ..	124	4·3	5·7	52	55	306	819	1,061

* The rates in this table are given with reserve, being in some respects unsatisfactory. For the years 1911–13 cases of disease among non-civilians have been excluded from the notification returns, but it has not been possible to distinguish their deaths; for the years 1920–1925 inclusive both cases and deaths relate to civilians only; for all other years the figures relate to the total population.

The numbers of small-pox cases in some years are too small to yield significant rates, but their basis of fact can be inferred from Table 4, and the rates quoted serve to bring out the extremely mild type of disease prevalent in 1921–28. The rates for poliomyelitis include polioencephalitis, which was not distinguished in the notification returns until 1919. The extraordinary rise in 1918 is partly ascribable to certification of a number of deaths from the then "new disease," encephalitis lethargica, as polioencephalitis, but mainly to a reduction in notifications unaccompanied by significant change in the number of deaths (*see* Report for 1918). The rates from this disease will be found to differ from some of those published in the Annual Reports of the Chief Medical Officer of the Ministry of Health, partly because polioencephalitis is included throughout and partly because special inquiries made by the Ministry in certain years have led to revision of the returns for those years, which is not embodied in Table XXIX. The cases there referred to are similar for each year dealt with, being in all cases derived from the published notification returns. The latter source of discrepancy applies also to meningococcal meningitis, and in this case there is a possibility that some cases of posterior basal meningitis may not have been notified as cerebro-spinal fever though all such deaths are included in the table.

and 12 in port sanitary districts, proportions per cent. of total enteric notifications varying from 14·2 in Wales and 17.0 in the North to 29·4 in the Midlands and 44·1 in the South. As the fatality of the paratyphoid cases was 91 per 1000 and of the typhoid 138, the lower proportion of the former in the North and Wales must contribute appreciably to the higher fatality there.

Almost the highest prevalence recorded in Table XXVIII is the 139 cases per million population, an increase over 1927 of 85 per cent., in London, where, therefore, fatality was exceptionally low, the average mortality not being exceeded.

This special prevalence in London is accounted for by an extensive outbreak recorded in the Annual Report of the Chief Medical Officer of the Ministry of Health as having involved 300–400 persons in London and its environs during July and August, the infection (paratyphoid B) being spread by cream distributed by a wholesale firm. The total number of cases recorded for the whole year in London (Table 28) is 595.

Table XXVIII shows that fatality was notably low not only in London, but throughout the South of England generally, the Southern rate for each class of area being much lower than for either the Midlands or North. This rule has applied during each of the last nine years to the smaller towns, but the county boroughs and rural districts of the Midlands have frequently returned lower fatality rates than those of the South. The fatality rates recorded in the North are as a rule, as in 1928, higher than in either the Midlands or South. On the whole fatality tends to fall, as recorded in Table XXIX, but this change has varied greatly for different sections of the population, a reduction, since 1920, of 56 per cent. for London, from 186 to 82, being accompanied by one of 1 per cent. for the same period in the urban districts of the North, from 181 to 179.

The highest mortality rates recorded in Table 7 are, for counties of over 100,000 population, 30 per million in Essex and 22 in Carmarthen. The county boroughs with highest rates are Bath (71), Southend (45), Canterbury (44), Southampton (41), Worcester (38), and West Bromwich (37). Of these areas Worcester C.B. alone had returned a high rate also in 1927. As in each year since the Bolton-upon-Dearne outbreak of 1921, the rate for the West Riding of Yorkshire (17) was much in excess of the general average.

6. **Small-pox.**—The deaths allocated to this cause numbered 53, the largest total since 1905, when there were 116, this being the last of a series of eight years, 1898–1905, in all of which the total for 1928 was much exceeded. But it is to be noted that the deaths of 1928 exceed those of any other year since 1905, and that its standardized death-rate (Table 6) has never been exceeded since that year.

The 53 deaths include all for which the medical certificates make mention of small-pox except five, of which four were assigned to cancer, and one to bronchitis. Under rules of selection long traditional in the General Register Office small-pox is preferred in such cases to almost all other causes of death simultaneously recorded, cancer, but not bronchitis, forming an exception. In the case where bronchitis was preferred to small-pox a male, aged 77, was certified to have died, in a small-pox hospital, from bronchitis and old age, convalescence from an attack of small-pox 22 days previously being recorded as a contributory cause. As it seemed that small-pox was mentioned rather to explain the place of death than as causing the death, and as the deceased was stated to have been at the time of death actually convalescent from the disease, the mention of small-pox was not regarded as a statement that it had shared in causing the death, which therefore was classified as if no such mention had been made.

It will be appreciated that under a rule of selection giving such high preference to small-pox over other concurrent diseases there must be a tendency under present conditions of widespread prevalence of a mild and practically innocuous type of the disease to overstate the mortality appropriately referred to this cause. For this reason, in several recent years, the deaths classed to small-pox by the Registrar General have exceeded those so dealt with, after local inquiry, by the Ministry of Health. The present rule was instituted under conditions of small-pox severity very different from those now obtaining, and its chief claim to retention at the present time appears to be the preservation of a formal continuity of classification practice and record which change of conditions has rendered largely illusory. A contemplated change of classification practice—abandonment of arbitrary rules of preference in selecting the cause of death to be tabulated in favour of guidance by the information as to relative importance provided by the death certificate itself except when this is ambiguous—will, however, remove this difficulty, and bring the practice of the General Register Office more into conformity with that of the Ministry of Health, as well as, it is believed, with the probabilities of the situation. The numerical importance of these cases has been exceedingly small in proportion to the embarrassment involved by them, and it will be easy, after the change of practice has taken place, to keep a record of its effect by noting, for some years at least, the total number of deaths so transferred from small-pox to other causes.

The type of disease prevalent in 1928 remained mild to a degree unprecedented in the official records before 1923, when the fatality rate suddenly fell from 28 to 3 per 1,000 cases, a level not exceeded until 1928, when Table XXIX shows that this rate rose from 3 in 1927, and 2 in the two preceding years, to 4.

The counties (with county boroughs) returning highest rates of prevalence, with the rates per 1,000 population in each case, are seen from Table 28 to have been—Monmouth, 2·69; Brecknock, 1·72; Durham, 1·69; Derby, 1·08; Soke of Peterborough, 1·08; Glamorgan, 0·71; West Riding, 0·70; Northumberland, 0·67; and Nottingham, 0·67. Of these all but Peterborough are coal mining counties, and the following comparison of order in small-pox prevalence in 1928 and in proportion of males employed in coal mining in 1921 (Census General Report, Table XLV) amongst the 63 counties shows how close was the association of small-pox with coal mining in 1928.

	Small-pox Rank, 1928.	*Coal Mining Rank*, 1921.
Monmouth	1	1
Brecknock	2	4
Durham	3	3
Peterborough ..	4	—
Derby	4	5
Glamorgan	6	2
Yorks, W.R.	7	10
Northumberland ..	8	9
Nottingham	8	8

For 1928 it may fairly be said that small-pox can be included amongst the bye-products of the coal mining industry.

7. **Measles.**—The deaths registered from this cause numbered 4,302, corresponding to a mortality of 109 per million population. But allowance for decreased proportion of children in the present population increases the rate on standardization from 121 to 159 for males and from 98 to 143 for females. The death-rate for children under 15 years of age, 430 per million, is seen from Table 6 to have been higher than in 1919, 1921, 1926, and 1927, but lower than in all other years than these.

Table XXX.—Measles, 1928: Mortality per 100,000 Living at Ages under 5 Years.

	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	346	—	346
County Boroughs ..	130	106	142	64	121
Other Urban Districts	60	101	81	109	85
Rural Districts ..	47	38	56	55	46
All Areas	96	86	201	83	119

The distribution throughout the country of mortality from measles is stated in Table XXX in the form of death-rates per 100,000 living at ages 0–5. Deaths at these ages in 1928 formed 88 per cent. of the total, and statement in this form prevents the comparison being prejudiced by varying proportions of children in the populations compared.

This table demonstrates, as usual, how preponderantly measles mortality is affected by city life. The increase shown for 1928 from rural districts to small towns, and from these to county boroughs, is common to the experience of each of the 18 years, 1911–28, for which the facts are available. It applies for 1928 to each section of England, but not to Wales, where the rate for the urban districts exceeded that for the county boroughs. The eighteen years furnish but one exception to this rule for the North of England, and one for the Midlands, but it has been broken six times by the rates for the South, and ten times by those for Wales. The rule of increase from South to North of England, though not holding for 1928, is also of very general application. In 1927, as in ten more of the same eighteen years, it applied to each class of area distinguished. Exceptions during the eighteen years to this rule number 3 for county boroughs, 3 for urban districts, and 7 for rural districts.

A table (XXX), in the Review for 1926 showed that the increase of mortality from the country to the large towns was accompanied and presumably largely explained, by a higher average age at death in the former than in the latter. The differential fatality of measles for young children is well known, and, though there are no national records of the ages of children attacked, it may be assumed with confidence that where attacks occur earliest in life the proportion of deaths during the first two years will be greatest, so that a relatively large proportion of deaths over two years of age must imply relatively late onset of the disease. These proportions may be ascertained from Table 20, and for 1928 are as stated in the following table.

Table XXXI.—Age Distribution of Mortality from Measles, 1928. Deaths over 2 years of age per cent. of Total.

	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	37	—	37
County Boroughs.. ..	32	31	46	54	34
Other Urban Districts ..	44	46	52	44	46
Rural Districts	38	55	66	41	54
All Areas	35	41	42	45	40

It will be seen that the proportion of late deaths decreases with urbanization from a maximum in the rural districts to a minimum in the county boroughs, and that it tends also for the most part to decrease from South to North.

The first mentioned difference appears to be a natural consequence of the relative isolation of the rural infant ; and the second may be associated with differences in the housing conditions of these sections of the country.

Table 7 shows that, of administrative counties with over 100,000 population, London returned the highest death-rate, 305 per million, Flint, 199, and Middlesex, 152, coming next. The highest county borough rates were—Worcester, 684; Plymouth, 411; Warrington, 364, and Bristol, 254.

The London rate, much the highest in Table XXX, had not been so high since 1922, when, at 375, as also in 1911, 1917, 1924 and 1926, the London rate stood highest in the corresponding table. In the metropolitan boroughs the crude rate at all ages varied from 755 per million in Bermondsey to *nil* in the City, Finsbury (708), St. Pancras (621), and Shoreditch (583) coming next to Bermondsey.

8. **Scarlet Fever.**—The deaths allocated to this disease during 1928 number 580, or just one more than in 1927. They correspond to a rate of 15 per million total population at all ages, and of 49 per million at ages under 15 years (Table 6). The latter rate is, of course, the better measure of mortality for diseases chiefly affecting the child population. Table 6 shows that it is the same as in 1927, and that for the third year in succession it is below any previously recorded, the nearest earlier approach being 62 in 1917.

The same table also shows that for thirteen years in succession this rate has been much lower than any recorded previous to this period (*i.e.*, to 1916), the mortality being now trifling compared with that prevalent a generation ago.

The progress of the decline from the maximum decennial rate of 1861–70 (Table 6) may be traced in the following statement of proportionate figures for subsequent periods, taking the rate of 2,617 in that decade as 1,000—1871–80, 729; 1881–90, 345; 1891–1900, 168; 1901–10, 119; 1911–20, 54; 1921–25, 35; 1926, 22; 1928, 19. Thus the mortality of 1928 was less than 2 per cent. of that experienced 60 years earlier.

Table XXIX shows that the decrease in fatality of cases of this disease, which has been observed for many years, still continues, the rate of 5·7 deaths per 1,000 notified cases in 1928 being the lowest in the table, and less than half that of only five years earlier.

Table XXXII.—Scarlet Fever, 1928 : Mortality per Million Living at Ages under 15 years.

	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	70	—	70
County Boroughs ..	70	35	38	39	54
Other Urban Districts	54	38	36	30	42
Rural Districts ..	45	42	39	37	41
All Areas	61	38	51	34	49

The distribution of mortality recorded in Table XXXII follows the general type which has been noted for the last 18 years. Mortality tends to increase with urbanization for England and Wales generally, and from South to North in each class of area. The second of these rules, which is of less constant application than the first, is broken for the county boroughs in 1928 by excess for the South over the Midlands; otherwise both rules apply as usual. During 1911–28 the rule of increase from South to North has been broken six times for the county boroughs, three times for the urban, and five times for the rural districts. Increase, for the country as a whole, with urbanization, from rural districts to county boroughs, has occurred in each of the 18 years except 1918 and 1926.

Table XXXIII.—Scarlet Fever, 1928 : Prevalence and Fatality.

	Cases per 10,000 Population aged 0–15 years.					Deaths per 1,000 Cases notified.				
	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	142	—	142	—	—	5	—	5
County Boroughs	129	108	82	43	113	6	4	5	9	5
Other Urban Districts ..	96	104	100	63	96	7	5	5	6	6
Rural Districts	80	88	86	39	80	7	6	7	13	7
All Areas	111	101	113	52	104	6	5	5	8	6

Table XXXIII shows that, as in five more of the last eight years, prevalence was higher in London than for any of the other sections of the population compared in the table. Fatality on the other hand, was, as usual, below average in London. As in the case of diphtheria, therefore, a milder type of infection appears to be recognised as scarlet fever in London than elsewhere, though the contrast is much less than that exemplified in Table XXXIX for diphtheria. This difference conforms, for 1928, with regular decrease of fatality from rural districts to large towns. This has been the tendency of the last three years, though previously fatality was generally highest in the county boroughs. In all sections of the population, except the rural districts of Wales, this rate continues to fall rapidly.

Broadly speaking, about half the deaths from scarlet fever are of young children under 5 years of age. In 1928 this proportion, 43·4 per cent., was lower than in any previous year except 1921 (41·8) since the record of age at death started in 1848. During last century this proportion was much higher than of late years. From 1848 to 1900 it varied from 60·1 (1893) to 68·3 (1895), but for 1901–05 and the four succeeding quinquennia it has stood as follows :—60·6, 58·4, 54·0, 48·4, and 48·6. In 1927 it was 43·5, and in 1928, 43·4. This change is probably related to the remarkable reduction of mortality records in Table 6, later incidence involving greater prospect of recovery. (It was shown in

the Report for 1886 that fatality is at its maximum in infancy, and falls rapidly with increase of age, being very much less over than under the age of five.)

The same relationship of age at death to total mortality as is thus established by temporal comparison for the country at large is shown by the following table to apply also to sectional comparison of different portions of the population at the same period. In this table quinquennial periods are used in order to avoid distortion of the general picture by accidental yearly fluctuation.

Table XXXIV.—Scarlet Fever at various Periods. Deaths at 0–5 per 1,000 at all Ages.

	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.
	1911–15.					1916–20.				
London	—	—	574	—	574	—	—	562	—	562
County Boroughs	579	577	475	587	572	533	529	393	568	528
Urban Districts	531	509	428	697	534	490	444	374	519	470
Rural Districts	509	422	406	500	464	435	373	356	388	398
All Areas	555	522	519	623	540	508	469	492	496	484
	1921–25.					1926–28.				
London	—	—	569	—	569	—	—	555	—	555
County Boroughs	513	536	466	464	516	500	484	492	417	494
Urban Districts	428	437	374	588	446	444	425	396	426	428
Rural Districts	451	314	299	511	384	391	318	200	233	307
All Areas	481	462	505	551	486	466	414	458	349	442

In each of the four periods compared the proportion of early deaths increases, like mortality, from rural districts to county boroughs, and generally reaches its maximum in London. There are no exceptions to this rule so far as England and Wales is concerned, and only 4 (out of 48 possible) for sections of the country. And, similarly, increase from South to North holds good for each class of area at each period save for excess for the county boroughs and urban districts of the Midlands over those of the North in 1921–25. This is the same scheme of distribution as has often been shown, e.g. in Table XXXII, to apply to mortality from scarlet fever, as from many other causes. It is probably to be expected that the greater isolation of the country should involve later age at attack and death, but the explanation of the Northern excess is less obvious. It will suffice here to note the fact of its existence as part of the general relationship between early attack and high mortality which indicates the practical importance, as a preventive measure, of shielding young children from infection. Populations which succeed in doing this, or possibly in which the natural tendency to early infection is comparatively slight, have a low death-rate from scarlet fever.

Table 7 shows that, amongst counties with over 100,000 population, mortality was highest in Bedford (28 deaths per million as compared with an average of 14 for all counties) and Shropshire (25). The latter county was highest of all in 1927.

The highest rates amongst the county boroughs (average 16) are contributed by five West Riding boroughs, Sheffield (47), Huddersfield (44), Rotherham (43), Bradford (38), and Leeds (36); with, in addition, St. Helens (45), Merthyr Tydfil (38), and Hull (37).

9. **Whooping Cough.**—The deaths allocated to this heading numbered 2,976, 1,343 of males and 1,633 of females. The excess for females is shown by Table 4 to be a constant feature of this disease, and tends to increase with age. The mortality was 75 per million total population at all ages, and 300 at ages under 15 years. The latter rate is lower than for any other year in Table 6, except 248 in 1919. It is less than one-third of that at the beginning of the century (940 in 1901–05). Until 1891–95 no quinquennial rate during last century was less than four times that for 1928.

Table XXXV.—Whooping Cough, 1928: Mortality per 100,000 Living at Ages under 5 Years.

	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	106	—	106
County Boroughs ..	145	93	67	115	119
Other Urban Districts	85	58	65	109	73
Rural Districts ..	73	51	53	65	58
All Areas	116	68	81	97	90

The distribution of mortality from this cause is indicated in Table XXXV.

It will be seen that extra-metropolitan mortality increased regularly with urbanization, as it has done in each year from 1911 onwards, except 1915 and 1919.

But the usual rule of increase of mortality, for each class of area considered separately, from South to North, is broken in 1928 by slight excess, for both urban and rural districts, of the South over the Midlands, though the rate for the North remains much the highest in each case. The fall of mortality in 1928 was confined to the Midlands and South, some increase occurring in the North and in Wales, chiefly in the county boroughs.

Table XXXVI shows that, as usual, the proportion of total deaths occurring in the first year of life declined with increasing urbanization, from rural districts to London. This rule does not always apply to the comparison between London and the county boroughs, but otherwise the only apparent exception to its

application from 1911 onwards is the equality shown for county boroughs and urban districts in 1926. But even in this case the urban district percentage (45·2) is higher than that of the county boroughs (44·6), so during the eighteen years available for this comparison no exception to the rule has occurred. During each of the last ten years except 1921 and 1928, the proportion of early deaths has been higher in Wales than in any of the three sections of England.

Table XXXVI.—Whooping Cough, Age at Death as affected by Urbanization : Deaths under One Year of Age per cent. of those at All Ages in each Year 1919–1928 inclusive.

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
London	34	45	43	33	47	38	43	44	41	44
County Boroughs ..	35	44	47	40	42	41	42	45	40	45
Urban Districts ..	43	53	53	43	47	46	47	45	44	48
Rural Districts ..	48	60	59	50	51	49	51	54	49	54
All Areas	40	49	50	41	46	43	45	47	43	47

This characteristic and stable difference between urban and rural experience of whooping cough mortality is set forth from another point of view in Table XXXVII.

Table XXXVII.—Mortality from Whooping Cough at various stages of childhood in 1923–1927 and 1928 in different classes of Area.

	Rates per Million living.						Rates per cent. of that for England and Wales.					
	1923–27.			1928.			1923–27.			1928.		
	0–1	1–2	2–5	0–1	1–2	2–5	0–1	1–2	2–5	0–1	1–2	2–5
England and Wales	2,888	1,999	430	2,245	1,434	295	100	100	100	100	100	100
London	2,758	2,068	457	2,555	2,015	299	95	103	106	114	141	101
County Boroughs ..	3,194	2,539	533	2,816	1,965	419	111	127	124	125	137	142
Urban Districts ..	2,729	1,778	393	1,894	1,135	239	94	89	91	84	79	81
Rural Districts ..	2,703	1,405	304	1,691	705	178	94	70	71	75	49	60

This table shows that the great advantage held by the urban and especially the rural districts over the great towns is largely concentrated on the second year of life, and applies only in minor degree to the first. In each period dealt with it is less also at 2–5 than at 1–2, both in urban and in rural districts. Possibly the explanation may be concerned with varying degrees of resistance to infection. It has frequently been pointed out in these Reviews that the effect of environment on mortality is at a maximum in the second year of life, and so it is just at this age

that the country child should be relatively in the most favourable position for recovery from an attack of whooping cough. The fact that the same comparative rural immunity in the second year of life does not apply similarly to other infections of childhood may perhaps be an indication that recovery from attack is especially associated with physical fitness in the case of whooping cough. And in the case of measles, where the rural advantage is fully as great as for whooping cough, it tends, though in much less degree, to display the same second year maximum.

This proportion of deaths under twelve months per cent. of those at all ages is extremely stable. During the years 1848–1928, for which record of age at death from whooping cough and other causes enables it to be stated, it has varied only from a minimum of 36 in 1918 to a maximum of 50 in 1902, 1903 and 1921. Despite the 1918 minimum it has tended to increase of recent years. From 1851–55 to 1886–90 the quinquennial proportions varied between 40 and 43, and from 1891–95 to 1921–25 from 45 to 49, except in 1916–20, when the 1918 minimum of 36 reduced the quinquennial proportion to 41. The possibility of some connexion of the exceptional 1918 figure with the influenza epidemic of that year naturally suggests itself. The proportion of early deaths would have been decreased, for instance, if deaths from influenza of children suffering from whooping cough had been ascribed to whooping cough to a proportionately greater extent over than under one year of age, which seems likely, in view of the age distribution of influenza mortality in that year, to have occurred*. But the proportion of early whooping cough deaths, which had varied between 45 and 50 in the 23 preceding years (1894–1916), fell to 40 in 1917 before reaching 36 in 1918. In 1919 it rose only to 40 again, but in 1920 to 49. From this point of view it would appear that whooping cough mortality for some reason underwent a sudden and temporary but independent change immediately before and contemporaneously with the great increase of influenza mortality in 1918 and 1919.

The proportion of deaths under one year has been invariably higher for males during the 81 years under review, the difference varying as a rule only from 3 per cent., e.g. in 1926, males 48, females 45, to 7, e.g. in 1928 males 51, females 44. In 1919, however, it rose to 10 (males 46, females 36). This was, however, a very exceptional year in the history of whooping cough mortality, as pointed out in the footnote. Whatever the cause of the exceptional reduction of mortality in 1919 may have been, it applied more to female infants than to other children. There

* Increase by influenza, in 1918, of mortality ascribed to whooping cough, appears the more probable, because, for each sex, this mortality was higher in 1918 than in any year since 1904, or than it has been since 1918. This applies to the rate at ages 0–5, a better measure in this case than the 0–15 of Table 6, which shows the rate for 1907 also as in excess of that for 1918. But whooping cough mortality has never been so low as in 1919, when also some transfer from influenza might have been expected.

were, in fact, exactly equal numbers of deaths (527) of infants of each sex, whereas in every previous year but one from 1848 onwards deaths of females had been in excess. But in 1924 deaths of males (877) exceeded those of female infants (843).

10. **Diphtheria.**—

The 3,191 deaths from diphtheria in 1928 include 1,580 of males and 1,611 of females. This excess for females is a very constant feature of the returns, applying to each year since the disease was first distinguished save one only—1922. The crude death-rate, on the other hand, is seen from Table 5 generally to be in excess for males, slight excess for females in 1926 being the only exception to this rule during the last eleven years. In reality, however, the female sex suffers most from this disease, as shown by excess, for females, of standardized mortality, varying from 5 to 14 per cent. during the six decades 1861–70 to 1911–20. In each of the years 1921–28 also the standardized rate has been higher for females except in 1922, when, as noted above, there were more male deaths. In 1928 the standardized rate for males was 104 and for females 106 per million (crude 84 and 78).

The history of diphtheria mortality is best expressed by the death-rate from diphtheria and croup at ages under 15 in Table 6, as during last century much diphtheria was evidently returned as croup, and the larger proportional child population in itself tended to produce a higher crude death-rate at all ages. The rate for 1928, 303 per million aged 0–15, is higher than in any of the five preceding years, but lower than in any year before 1923. It is little more than one-fifth of the maximum rates during the years 1856-65, or than one-fourth of that marking the secondary peak of 1893.

Table XXXVIII.—Diphtheria, 1928: Mortality per 100,000 living at Ages under 15 Years.

	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	35	—	35
County Boroughs ..	30	35	51	32	34
Other Urban Districts	23	33	37	37	31
Rural Districts ..	17	22	22	27	21
All Areas	26	31	35	33	30

Table XXXVIII shows that, as in 1926 and 1927, the county boroughs of the South returned a higher rate than any other population distinguished in the table. Before 1926, for seven years consecutively, 1919–25, the London rate had been highest. It has exceeded that of England and Wales in each of the years 1917–28, though during 1911–16 it kept near the general average. The later excess increased yearly from 15 per cent. in 1917 to 154 per cent. in 1922, gradually falling again to 17 per cent. in 1928.

The recorded rate increases regularly from North to South in both county boroughs and urban districts, the rural rate also being lowest in the North. In each section of England the rate increases regularly from rural districts to county boroughs, as it did also in 1927 and in three other years, 1912, 1924, and 1925, since the commencement of this tabulation in 1911.

During the 18 years 1911–28 the general tendency has been towards increase of diphtheria mortality with urbanization, though with some exceptions, chiefly in 1916, 1917, and 1919–22, in each of which years the rate for the county boroughs of England and Wales was lower than that for the urban districts. But in each of the 18 years mortality has been lowest in the rural districts, and in ten of them, including the last three, increase has been regularly progressive from rural districts to county boroughs. This is in sharp contrast with earlier experience. During the first 26 years of recorded diphtheria mortality in this country, 1855–80, mortality was greatest in the less densely populated areas. But "although during the whole period the sparse districts suffered most heavily, yet in each successive period the mortality of the towns, relatively to that of the rural districts, had become greater."* This change has since continued till now, for the fourth time in five years (1924, 1925, 1927 and 1928) the former association with sparse population has been reversed in each section of the country.

Table XXXIX shows that, as in each year since 1915, the proportion of cases notified was higher in London than in any other section of the population distinguished, the county boroughs of the South, which stood highest in 1911–1915, coming next. The excess of prevalence in London, 82 per cent. in 1928, has been over 100 per cent. in many recent years as compared with the general average; while fatality in London, 37 per cent. below the general average in 1928, is consistently below it each year, and is now, for the fourth year in succession, the lowest in the table. So persistent a contrast suggests a varying standard of diagnosis, cases similar to the milder of those notified as diphtheria in London not being so regarded elsewhere, especially in the North of England, where, as in 1928, fatality is invariably higher than in other sections of England, and in Wales, where in 1928 as in nine other years of the last 18 it has been highest of all.

From 1911 on prevalence, as defined in Table XXXIX, has increased from 43 for England and Wales in 1911 to 62 in 1928, while fatality has fallen from 103 in 1911 (and 107 in 1915) to 52 in 1927 and 1928. Thus the temporal contrast corresponds with that between the North of England (and Wales) and London, and is probably due to the same cause—increasing completeness of notification.

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* The Geographical Distribution of Diphtheria in England and Wales. Longstaff.

Table XXXIX.—Diphtheria, 1928 : Prevalence and Fatality.

	Cases per 10,000 Population aged 0–15 years.					Deaths per 1,000 Cases notified.				
	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	113	—	113	—	—	33	—	33
County Boroughs	56	78	89	82	67	56	48	61	42	53
Other Urban Districts ..	39	66	64	56	56	62	52	61	70	58
Rural Districts	32	37	34	40	35	58	65	74	74	67
All Areas	47	62	83	57	62	58	52	46	62	52

It will be seen that the excess of prevalence in London falls into line with large excess for great towns over small, and for small towns over rural areas, in all parts of England, fatality, on the other hand, being higher in the rural districts, as it is lower in London, than in the other towns, great or small, of England and Wales.

Amongst the administrative counties of highest diphtheria mortality, comparing with 76 for the counties as a whole, is a group of four adjacent fen counties, Cambridge (158), Ely (167), Peterborough (118), and Lincs. Holland (124), the combined rate for the four being 145. Besides these Glamorgan (150) and Kent (147) may be noted amongst the larger counties, and Anglesey (234) and Merioneth (137) amongst the smaller. The two latter returned high rates (134 and 205 respectively, as compared with the county average of 61) also in 1927, while Glamorgan stood highest amongst the larger counties (over 100,000 population). In the East Anglian group, Cambridge, Ely and Peterborough were over average in 1927, but Lincs. Holland was below it. The county boroughs of highest mortality, comparing with a county borough average of 91, are Walsall (419), East Ham (378) and Coventry (273). For each of these mortality was in much excess also in 1927, Walsall coming first amongst the county boroughs then also, and East Ham fourth. The Walsall rate has been particularly heavy for several years now, having been highest for the county boroughs in 1924, 1925, 1927, and 1928.

11. **Influenza.**—The deaths assigned to this cause numbered 7,754—4,084 of males and 3,670 of females—yielding a crude mortality of 196 per million persons living, which is reduced on standardization, by allowance for the increased age of the population, to 161 (Table 6). This is the lowest rate since 1914, as also for males and females separately, the crude rate of 216 for males (Table 5) reducing to 185, and of 178 for females to 139, on standardization. This reduction, by 14 per cent. for males and 22 per cent. for females, is a development mainly of recent years, as in 1911 (ten years after the date taken as standard) there was no reduction for males and one of 11 per cent. only for females. The resultant reduction of 6 per cent. for the sexes jointly has since gradually increased, with increasing age of the

population, to 18 per cent. in 1928, although the increase was interrupted by slight actual decrease of reduction in 1918, when, owing to altered age incidence of mortality, age for the time being ceased to be a factor promoting crude mortality. But by 1921 the standardization reduction had returned to its 1917 value of 10 per cent., thus showing that the old relation of mortality to age had been substantially restored, and since then this reduction has steadily increased, with ageing of the population, to its 1928 value of 18 per cent.

But influenza mortality still affects later life relatively less than before 1918. The age distribution of deaths in 1928 compares as follows with that for 1890–1917, and for 1918, when the effect of the increased age of the population in 1928 is eliminated by comparing deaths in the standard population of 1901 at the rates applying to the three periods :—

Table XL, England and Wales—Age Distribution of Deaths from Influenza in the Standard Population (1901) at the Age-Group Mortality Rates experienced in contrasted periods.

Deaths per 1,000 at all Ages.

	In each Age-group.			Up to and including each Age-group.		
	1890–1917.	1918.	1928.	1890–1917.	1918.	1928.
0– ..	119	259	151	119	259	151
15– ..	121	447	159	240	706	310
35– ..	206	182	229	446	888	539
55– ..	367	93	321	813	981	860
75– ..	187	19	140	1,000	1,000	1,000
All ages	1,000	1,000	1,000	1,000	1,000	1,000

It will be seen that the proportion of deaths under each age dealt with, 15, 35, 55 and 75, is still greater than in 1890–1917, though much smaller than in 1918, the proportion at ages over 75 being correspondingly decreased as compared with 1890–1917

The distribution of influenza mortality throughout the country is indicated in Table XLI.

For the fifth year in succession the recorded mortality was lowest in London, though this was by no means the rule prior to 1924, the London rate sometimes, indeed, exceeding that for England and Wales. The London minimum harmonizes with a very definite gradation of mortality from a maximum in the rural districts to a minimum in the great towns, which applies also to the Midlands and South of England separately in 1928, and to many of the 18 preceding years. The connotation of the

Table XLI.—Influenza, 1928 : Civilian Mortality per Million Living at All Ages.

	North.	Mid-lands.	South.	Wales.	England and Wales.
London	—	—	132	—	132
County Boroughs ..	221	135	163	214	187
Other Urban Districts ..	276	161	176	294	213
Rural Districts	258	202	200	285	222
All Areas..	244	163	161	274	197

term influenza appears to be somewhat wider in rural than in urban practice, for it is improbable that the mortality strictly attributable to this highly infectious disease is greater in the more sparsely populated areas. Death, moreover, is generally due in these cases to respiratory disease, which (Table XLVIII, Review for 1925) is very much less fatal in rural than in urban areas.

In each of the eight years which can now be compared in this respect, mortality from influenza with pneumonic complications has been in considerable excess for males, while that with other pulmonary and without stated complications has been in some excess for females, except that in 1928 the other pulmonary complications' rate is equal for both sexes (Table 5). Of the deaths in 1928, 45 per cent. were stated to have been associated with pneumonic and 19 per cent. with other pulmonary, complications. The proporton with pneumonic complications was 50 per cent. for males and 39 for females.

Table 18 shows that deaths were most numerous in the first quarter of 1928, when 3,231 occurred out of 7,754 in the year, or 42 per cent. of the whole. As usual in years of low epidemicity this winter concentration was comparatively small in 1928, the first quarter proportion of 42 per cent. comparing with 81 for 1927.

23. **Encephalitis Lethargica.**—The 1,072 deaths allocated to this cause yield a crude mortality of 27 per million, for persons, males, and females alike, which is slightly reduced on standardization to 25 for males and 26 for females. For each sex this is the lowest rate since 1923, though higher than for any year from the first recognition of the disease in 1918 to 1923. The 1,309 notifications (Table 27) are also fewer than in any year since 1923, though more than in any year before 1924, with the single exception of 1921. The resultant fatality, 819 deaths per 1000 cases, is the highest yet recorded (Table XXIX), but a number of deaths are now attributed to the remote effects of attacks which may have been notified years previously. A sudden increase of notifications in 1924 (from 1,025 to 5,039, the highest number so

far reached) was accompanied by a fall in fatality from 517 to 279 per 1,000 cases, but since then the recorded fatality has increased each year.

As in the seven preceding years, with which alone comparison can be made, mortality in 1928 was widely spread over all sections of life except old age.

As usual, it exceeded the average (standardized) at 0–5, dropping below it at 5–15. After childhood the death-rate gradually increases again to a maximum as old age approaches, then suddenly dropping below the general average at 75–. This statement applies to each sex in each of the eight years compared, except that in 1921 and 1924 the rate for females aged 0–5 exceeded the later maximum. This maximum occurred in 1928 at 55–65 for males and at 65–75 for females. It has fallen at 55–65 for males in each year 1923–28, but for females, apart from 1924, has varied from 55–65 to 65–75. There is no very characteristic sex difference at any age, mortality being on the whole much the same for both sexes, except that at 55–65, the period of maximum male mortality, there has been excess for males in each of the eight years.

Outside London, where the rate was only 41 per cent. of the general average (Table XLIII), it has varied only between a minimum of 74 per cent. in the rural districts of the Midlands and a maximum of 152 per cent. in the rural districts of Wales. London has returned a lower rate than England and Wales in each of the eight years except 1922, though never previously so much lower as in 1928. The London rate, per cent. of that for England and Wales, has been as follows in the eight years 1921–28—84, 122, 79, 92, 80, 59, 59, 41. This low London mortality is shown in the following table to be due both to low prevalence and low fatality, as recorded in London.

Table XLII.—Encephalitis Lethargica, 1928 : Prevalence and Fatality.

	Cases per 1,000,000 Population.					Deaths per 100 Cases notified.				
	North.	Midlands.	South.	Wales.	England and Wales.	North.	Midlands.	South.	Wales.	England and Wales.
London ..	—	—	23	—	23	—	—	50	—	50
County Boroughs	49	32	35	21	41	70	80	67	100	73
Other Urban Districts.	35	27	33	35	32	111	94	74	100	96
Rural Districts	31	26	32	31	29	98	78	82	131	90
All Areas ..	42	28	29	31	33	84	85	67	110	82

Even though the present limitation of notification to acute cases of the disease has the effect, as pointed out in the Report for 1928 of the Chief Medical Officer of the Ministry of Health, of causing discrepancy between cases and deaths, since death may occur years after infection, the fact that deaths bear a much smaller ratio to notified cases in London than in any other section of the population, although notification also is almost at a minimum in London, is of considerable interest. Fewer cases, proportionately, are diagnosed in London than elsewhere, and of those diagnosed far fewer die. In view of the exceptional facilities for diagnosis provided in London by the ready access of all its population to highly skilled medical advice this apparent deficiency of cases and especially of deaths in London may well raise the question whether the disease is not, perhaps, over-diagnosed elsewhere. This may apply especially to fatal cases, regarding which attribution of obscure nervous symptoms to a previous inferential infection of this nature may well, at times, be in some degree speculative. The fact that deaths exceeded notifications in Wales and in the urban districts of the North may be held to give some support to this hypothesis, even though the reality of such excess is not theoretically inconceivable, in view of the possible time interval between notification and death. But as deaths in Wales exceed acute cases they must largely represent the termination of chronic cases of illness of which the specific nature has been inferred after the earlier and more characteristic stages are past. In these circumstances diagnosis must be to some extent speculative, and it seems significant that it should apparently be made least in London and most in the rural districts of Wales.

The distribution throughout the country of mortality from this cause is stated in Table XLIII.

Table XLIII.—Encephalitis Lethargica, 1928 : Crude Civilian Mortality per Million Living at All Ages.

	North.	Midlands.	South.	Wales.	England and Wales.
London	—	—	11	—	11
County Boroughs..	34	26	24	21	30
Other Urban Districts.	39	26	24	35	30
Rural Districts ..	31	20	27	41	26
All Areas	35	24	19	34	27

Table 18 shows that the deaths were widely scattered over the year, monthly totals ranging from 118 in April to 69 in September, for the twelve months dealt with. The spring maximum appears, so far, to be characteristic of the disease.

25. **Other Epidemic Diseases.**—The number of deaths so classified in 1928 is 80, chiefly composed of 12 from German measles and 62 from varicella, particulars of which are included in Table 17. Of the other 6 deaths from miscellaneous infections (5 of which were of males), 2 were ascribed to blackwater fever, 1, that of the only female, to glandular fever, and 3 to kala-azar.

31–37. **Tuberculosis.**—The deaths assigned to tuberculous affections in the aggregate number 36,623—20,157 of males and 16,466 of females—1,550 less than those so classified in the previous year.

The standardized death-rate resulting from these figures, 909 per million persons (males 1,015, females 812), is the lowest in Table 6, comparing with 942 and 952 in 1926 and 1927, the only other years with a rate of under 1000. In each quinquennium of the later 19th century, since the commencement in 1848 of tabulation by cause of death and age in combination, the rate was more than double (in 1851–55 almost exactly four times) that of 1928. The proportion of tuberculosis to total mortality has also fallen greatly at the same time, though not nearly to the same extent. In 1851–55 this proportion (based on the standardized rates so as to exclude the effect of change in the composition of the population) stood at 16·8 per cent., and by 1927 it had fallen to 9·0. In 1928 it has risen to 9·2, the general death-rate having fallen by 6·6 per cent., and the tuberculosis rate only by 4·5. For each sex the 1928 death-rate is the lowest yet recorded. The decrease of mortality in 1928 is seen from Table 18 to have occurred chiefly in the first and third quarters of the year, there being 864 fewer deaths in the first, and 424 in the third, than in 1927, with a slight increase (by 22 deaths) in the second, and a probable slight decrease, not yet exactly ascertained, in the fourth. Most of the reduction thus occurred in the first quarter, in which influenza had caused considerable increase of mortality tabulated to tuberculosis in 1927, as it will probably be found to have done also in 1929. The decrease of tuberculosis deaths in 1928 was 577 in February, when influenza was at its worst in 1927, July coming next with 187.

Table XLIV.—England and Wales: Mortality from Tuberculosis (All Forms) per Million Population, 1912–14, 1926, 1927, and 1928.

	Males.				Females.				Persons.			
	1912–14	1926	1927	1928.	1912–14	1926	1927	1928.	1912–14	1926	1927	1928.
All Ages { Crude	1,571	1,105	1,112	1,067	1,169	827	842	800	1,364	961	972	928
All Ages { Standardized	1,542	1,058	1,061	1,015	1,174	839	854	812	1,349	942	952	909
0–	2,081	1,025	1,012	911	1,717	840	819	748	1,900	934	916	830
5–	572	339	329	325	580	344	336	311	576	341	332	318
10–	447	278	259	265	687	407	417	403	568	342	338	334
15–	939	764	796	788	1,226	1,162	1,196	1,195	1,084	962	995	991
20–	1,501	1,268	1,221	1,204	1,381	1,432	1,433	1,397	1,439	1,351	1,328	1,301
25–	1,816	1,380	1,337	1,301	1,403	1,176	1,222	1,159	1,599	1,269	1,275	1,225
35–	2,189	1,621	1,620	1,505	1,374	872	884	820	1,767	1,216	1,221	1,133
45–	2,384	1,626	1,750	1,626	1,185	680	703	647	1,762	1,128	1,196	1,106
55–	2,213	1,346	1,317	1,318	967	563	592	552	1,553	935	936	916
65–	1,378	869	936	917	752	457	476	471	1,031	642	683	672
75 and up ..	586	302	453	375	440	311	304	311	498	308	362	336

The decrease in 1928 is seen from Table XLIV to apply to every age when sex is disregarded, though for males separately trifling increases are recorded at 10–15 and at 55–65, and for females at 75–.

In order to give a somewhat longer range view of the reduction of tuberculosis mortality as it affects individuals of varying sex and age, Table XLV is continued from previous reviews.

Table XLV.—England and Wales: Mortality from Tuberculosis in 1928, per cent. of that in 1912–14.

	Males.	Females.	Persons.
All Ages { Crude	68	68	68
All Ages { Standardized.	66	69	67
0–	44	44	44
5–	57	54	55
10–	59	59	59
15–	84	97	91
20–	80	101	90
25–	72	83	77
35–	69	60	64
45–	68	55	63
55–	60	57	59
65–	67	63	65
75–	64	71	67

In this table the mortality of the year under review is compared at each age with the most exacting pre-war standard available—the rates for 1912–14, after which war and influenza brought about a temporary increase. The fall since 1912–14 is seen to be slightly increased on standardization, from 32 to 33 per cent. for persons of both sexes, a trifling decrease (32 to 31 per cent.) for females being more than counterbalanced by an increase from 32 to 34 per cent. for males. Reduction is greatest in childhood, amounting to 56 per cent. for each sex at 0–5, 43 for males and 46 for females at 5–10, and 41 for each sex at 10–15. In youth, on the other hand, reduction is least, amounting to only 16 per cent. for males aged 15–20, and being replaced by a 1 per cent. increase for females of 20–25, with reduction of only 3 per cent. for females of 15–20. At 20–25, which has been the age of highest mortality for females from 1918 onwards, excess for that sex over the 1912–14 standard has been continuous from 1915 onwards. Females aged 15–25, indeed, form the only section of the population whose tuberculosis mortality has not materially declined of recent years. This has resulted in the shifting of the maximum mortality age for females from 35–45, where it had stood for many years to 20–25. This change was very sudden, for in 1917 the rate was highest at 15–20, but since then the maximum has remained at 20–25. But though this change itself occurred only during the war, progressive developments leading up to it had

been in progress for a number of years previously. The rates for females at 15–20 and 20–25, after falling rapidly during the closing years of the nineteenth century, suddenly ceased to do so during the first year or two of the twentieth, with the result that the rate at 20–25 was higher in 1927 than in 1903, and that at 15–20 higher in 1928 than in 1910, and almost as high as in 1901. That at 25–35, on the other hand, has continued to fall, though more slowly in the twentieth than in the nineteenth century, with the result that it, before the war the highest of these three rates, is now well below that at 20–25, and has for the past ten years been almost the same as that at 15–20. Up to the war the three rates retained the order 25–35, 20–25, 15–20, though the gaps between them were decreasing. All were much increased during the war and the great influenza epidemic, since when the stationary rate at 20–25 has been considerably higher than the other two, which for the last ten years have been almost equal, falling slowly since 1920, in which year the rate at 15–20 was still well above its pre-war level.

After this period of slight or even negative decrease at 15–35 there is again in later life a very substantial reduction, especially for females, whose fall exceeds that of the males at each age from 35 to 75. For each of these four age-groups mortality for persons of both sexes is now less than two-thirds of what it was immediately before the war.

The recent history of tuberculosis mortality in this country, since the time of its large apparent increase by the great influenza epidemic of 1918–19, is set forth in Table XLVI and in Diagram II constructed from it. The death-rates shown for total and for respiratory tuberculosis are in each case compared with those extrapolated from the curve of declining mortality for the years 1866–1914, when, as discussed in the Review for 1921, the rate of fall recorded was remarkably constant. The diagram shows that mortality from respiratory tuberculosis has been declining during recent years at much the same rate as during the half century before the war, after first recovering by 1920 the ground lost (as compared with the extrapolated rates) during the war and the epidemic of influenza immediately after. The agreement is closest for males, whose mortality is for the third year in succession below that predictable from the curve and has only twice, since 1919, exceeded it. The rate for females practically coincides with the curve value, as in 1926, after excess varying from 5 to 11 per cent. during the remainder of the nine years dealt with.

For tuberculosis as a whole agreement is not so close, the recorded rate for persons of both sexes being now 11 per cent. in excess. But the rate of fall for non-respiratory tuberculosis was increasing so fast as 1914 approached that prolongation of the 1866–1914 curve provides a standard considerably more exacting for total than for respiratory tuberculosis, and which seems, therefore, likely to be increasingly exceeded as time goes on.

Diagram II.—Mortality from Tuberculosis in each Year, 1920–1928, in England and Wales. Standardized rates compared with those calculated by prolongation of the curve of decline during 1866–1914.

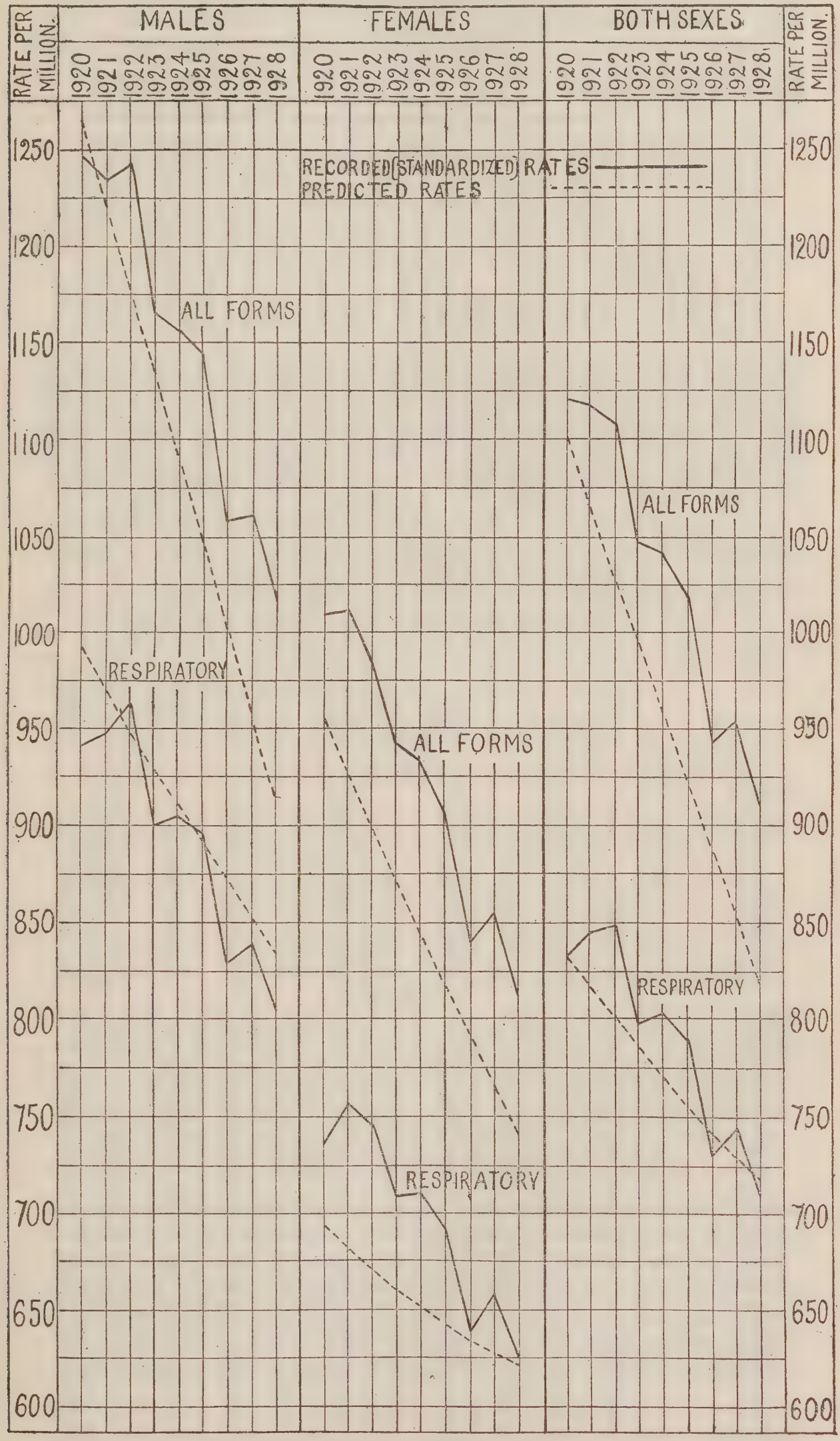


Table XLVI. England and Wales. Mortality from Tuberculosis in each Year 1920–28.

Standardized Rates per Million and Comparison of these with those predictable on the assumption of continuance of fall since 1866-1914 at the same rate as during that Period (see Review for 1921, Diagram 4).

	Recorded Mortality (Standardized).						Mortality calculated by Prolongation of the Curve of decline during 1866–1914.						Recorded Mortality per cent. of calculated.					
	All Forms.			Respiratory.			All Forms.			Respiratory.			All Forms.			Respiratory.		
	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.	Males.	Females.	Both Sexes.
1920	1,248	1,010	1,123	940	737	833	1,264	955	1,101	991	693	833	99	106	102	95	106	100
1921	1,233	1,011	1,117	944	757	845	1,221	927	1,065	970	681	816	101	109	105	97	111	104
1922	1,241	985	1,107	963	745	848	1,177	899	1,029	949	670	801	105	110	108	101	111	106
1923	1,164	942	1,049	900	707	798	1,134	871	994	929	660	785	103	108	106	97	107	102
1924	1,156	934	1,039	904	708	801	1,090	844	958	909	651	771	106	111	108	99	109	104
1925	1,143	904	1,017	895	691	788	1,046	817	923	890	642	756	109	111	110	101	108	104
1926	1,058	839	942	829	638	730	1,002	791	888	871	635	743	106	106	106	95	100	98
1927	1,061	854	952	838	660	744	958	766	853	852	628	730	111	111	112	98	105	102
1928	1,015	812	909	803	625	709	913	741	818	833	623	718	111	110	111	96	100	99

Table XLVII.—Tuberculosis of the Respiratory System.—Civilian Mortality at Different Ages, 1928.

	Mortality per 100,000 Civilians Living at Various Age Groups.						Ratio per cent. of Mortality in England and Wales.				
	England and Wales.	London.	County Boroughs.	Other Urban Districts.	Rural Districts.	All Urban Districts.	London.	County Boroughs.	Other Urban Districts.	Rural Districts.	All Urban Districts.
MALES.											
All Ages—											
Crude	88	114	110	78	58	97	130	125	89	66	110
Standardized ..	81	102	100	72	55	88	126	123	89	68	109
0—	14	16	21	12	5	17	114	150	86	36	121
5—	9	9	11	8	5	10	100	122	89	56	111
15—	85	108	98	82	58	92	127	115	96	68	108
25—	120	128	134	112	102	124	107	112	93	85	103
35—	142	178	178	119	100	153	125	125	84	70	108
45—	153	208	204	127	85	171	136	133	83	56	112
55—	123	187	161	104	70	139	152	131	85	57	113
65—	82	126	113	70	48	95	154	138	85	59	116
75 & up ..	29	67	39	29	12	38	231	134	100	41	131
FEMALES.											
All Ages—											
Crude	64	68	74	59	55	66	106	116	92	86	103
Standardized ..	63	64	71	57	56	64	102	113	90	89	102
0—	10	10	14	9	8	11	100	140	90	80	110
5—	16	12	20	16	14	17	75	125	100	87	106
15—	113	122	126	104	101	116	108	112	92	89	103
25—	106	101	114	100	105	106	95	108	94	99	100
35—	74	74	89	63	69	75	100	120	85	93	101
45—	57	65	70	51	42	61	114	123	89	74	107
55—	47	59	52	43	41	49	126	111	91	87	104
65—	38	37	46	37	30	40	97	121	97	79	105
75 & up ..	21	31	22	18	19	22	148	105	86	90	105
PERSONS.											
All Ages—											
Crude	76	89	91	68	57	81	117	120	89	75	107
Standardized ..	71	82	84	64	56	75	115	118	90	79	106
0—	12	13	18	10	6	14	108	150	83	50	117
5—	12	10	16	12	10	13	83	133	100	83	108
15—	99	115	112	93	78	105	116	113	94	79	106
25—	112	113	123	106	104	114	101	110	95	93	102
35—	105	120	130	88	83	110	114	124	84	79	105
45—	102	131	133	86	62	112	128	130	84	61	110
55—	83	118	104	71	55	91	142	125	86	66	110
65—	58	75	75	52	38	64	129	129	90	66	110
75 & up ..	24	44	28	23	16	28	183	117	96	67	117

The 29,799 deaths from respiratory tubercle form 81 per cent. of the total allocated to tuberculosis, and 6·5 per cent. of those from all causes.

The distribution of this mortality by class of area as well as by sex and age is shown in Table XLVII.

The relation of phthisis mortality to urbanization is expressed by the decline of the standardized rate for persons from 82 per 100,000 in London and 84 in the county boroughs to a minimum of 56 in the rural districts, the latter being 21 per cent. below the general average, and the county borough maximum 18 per cent. above it.

As in previous years (1921–27) for which this comparison has been made, the experience of females in London has been much superior to that of males, their rate being 2 per cent. above average, whereas that for London males is 26 per cent. in excess. Urbanization in fact, increases phthisis mortality much more for males than for females. As in other years also, this applies particularly to the higher ages. The contrast between a low early mortality in London and a high rate at 0–5 in the county boroughs is also a recurrent feature, the recorded mortality of early life generally being consistently much higher in the county boroughs than in London, and that of later life lower. Taking the London rate as 100 at each age, the ratios for the county boroughs (both sexes) for each of the six recent years for which this table has been published are as follows :—

	1922	1923	1924	1926	1927	1928
0– ..	164	129	175	244	210	138
5– ..	157	146	140	160	178	160
15– ..	101	109	108	108	102	97
25– ..	106	108	108	111	113	109
35– ..	106	104	107	115	105	108
45– ..	85	91	88	99	101	102
55– ..	75	90	86	89	97	88
65– ..	67	81	93	80	74	100
75– ..	41	72	53	75	66	64

This relationship, however, has not existed in its present form for very long. In both 1911 and 1913, for which similar tables were published, the London rate at 0–5 was in considerable excess of that for the county boroughs. But in each of those years, as recently, London mortality was uniformly higher throughout later life, the excess setting in earlier, at 30 instead of 55.

Table 7 shows that, as in 1927, London returned the highest death-rate (894 per million) from phthisis amongst the English counties, though in Wales five higher rates were recorded, Caernarvonshire, 1,404, taking first place. Amongst counties of over 100,000 population the lowest rates were those of Buckinghamshire, 385; Wiltshire, 478; Oxford, 489; Derbyshire, 514; Hertfordshire, 516; Shropshire, 517 and Norfolk, 546 per

million. Bucks returned the lowest rate also in 1927. The highest county borough rates were those for South Shields, 1,634 ; Salford (highest in 1927), 1,205 ; Liverpool, 1,188, and Middlesbrough, 1,185. The Southport rate, 492, was lowest.

The death-rates from all the forms of non-respiratory tuberculosis mortality distinguished continue to fall rapidly, as may be seen from Table 5, although the crude rates in this table somewhat exaggerate the fall, which is due partly to the decreasing proportion of young children in the population. Even, however, when allowance has been made for this by standardization the rate for tuberculosis of the nervous system is found to have fallen for males from 164 per million in 1915 to 87 in 1928, and for females from 149 to 80. For tuberculosis of the peritoneum and intestines the fall of the standardized rate has been even more remarkable—for males from 124 in 1911 (111 in 1915) to 39 in 1928, and for females from 115 in 1911 (98 in 1915) also to 39 in 1928. Whether the change represents a real reduction of mortality or decreasing laxity of diagnosis may be open to question, but reduction by over two-thirds (for males) in 18 years of this form of mortality return is remarkable in either case.

The rapidity with which non-respiratory tuberculosis mortality in general continues to fall may be gathered from Table XLVI. During the nine years covered by this table the standardized rate for both sexes has fallen without interruption from 290 to 200 per million or by 31 per cent., whereas that from the respiratory form of the disease has fallen, with four interruptions of the fall, by 15 per cent. During these nine years the proportion of non-respiratory to total (standardized) mortality has fallen from 26 to 22 per cent.

38. **Syphilis.**—Table 4 shows that the number of deaths ascribed to this disease, 1,532, is the largest since 1921, the fall from 2,023 in 1920 to 1,185 in 1925 having ceased with that year, since when each year has shown some increase. This increase chiefly applies to 1927 and 1928, which have been affected by the introduction in the middle of 1927 of the new form of Medical Certificate of cause of death described in the Review for that year. This certificate form, now sent under cover to the local Registrar by the certifying practitioner and providing means of later supplementary information, has had the effect of increasing the number of deaths assigned to syphilis. This number has always been, and no doubt still is, much understated, but the increase of the last two years, during the half and whole of which, respectively, the new form has been in use, must be taken to represent some decline in this understatement. It applies more to males than to females, even when allowance is made for the lower death-rates of females by plotting on the logarithmic scale. As shown by Diagram III, the increase affects only ages over 5, the remarkable decline since 1920 of mortality in early childhood still continuing, though latterly at a much reduced rate. This is probably

natural, since the cause of death of an infant dying from syphilis is less easy to conceal, by recording the manifestations of the disease while suppressing their specific origin, than that of an adult. It was to be expected, therefore, that the new information, increasing the extent of recorded syphilis mortality, should apply chiefly to adults. But although the recent increase has occurred at a time rendering it subject to this special influence, the possibility has to be borne in mind that it may in some degree represent an actual increase of mortality caused perhaps by increased infection during 1914–18.

The history of standardized syphilis mortality for each sex is recorded in Table XLVIII and in Diagram III derived from it, with distinction of its very important juvenile fraction. Up to 1923 it will be seen that over two-thirds of the total recorded mortality affected children under five years of age, though since then the continued fall of their rate, while that at higher ages has been rising, has reduced this fraction to about half (less for males and a little over half for females).

Table XLVIII.—Standardized Mortality from Syphilis in England and Wales, 1911–1928, at all ages, and with distinction of those occurring in childhood (0–5) and in Later Life.

	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
Rate per million of all Ages.																		
Males :																		
All ages	60	63	68	71	62	67	74	72	71	74	64	50	48	42	39	43	45	50
Under 5	39	43	47	50	44	47	52	53	54	59	49	35	33	26	24	26	22	21
Over 5	21	20	21	21	18	20	22	19	17	15	15	15	15	16	15	17	23	29
Females :																		
All ages	45	43	50	52	45	45	52	50	50	56	48	37	30	28	25	26	29	28
Under 5	33	31	37	39	33	34	41	39	40	47	38	28	23	20	17	17	17	15
Over 5	12	12	13	13	12	11	11	11	10	9	10	9	7	8	8	9	12	13
Rate of Males per cent. of Rate for Females.																		
All ages	133	147	136	137	138	149	142	144	142	132	133	135	160	150	156	165	155	179
0–5	118	139	127	128	133	138	127	136	135	126	129	125	143	130	141	153	129	140
5–	175	167	162	162	150	182	200	173	170	167	150	167	214	200	188	189	192	223
Rate at 0–5 per cent. of Rate at all Ages.																		
Males	65	68	69	70	71	70	70	74	76	80	77	70	69	62	62	60	49	42
Females	73	72	74	75	73	76	79	78	80	84	79	76	77	71	68	65	59	54

These records are presented in standardized form owing to the distortion of the crude death rates by the great changes of recent years in the constitution of the population. Syphilis mortality, as returned on death certificates, falls mainly on infancy and on later middle life. In 1928 the deaths at different ages compared as follows :—

	Males.	*Females.*	*Both Sexes.*
0–	30	39	33
5–	8	11	9
35–	51	40	47
65–	11	10	11
All ages	100	100	100

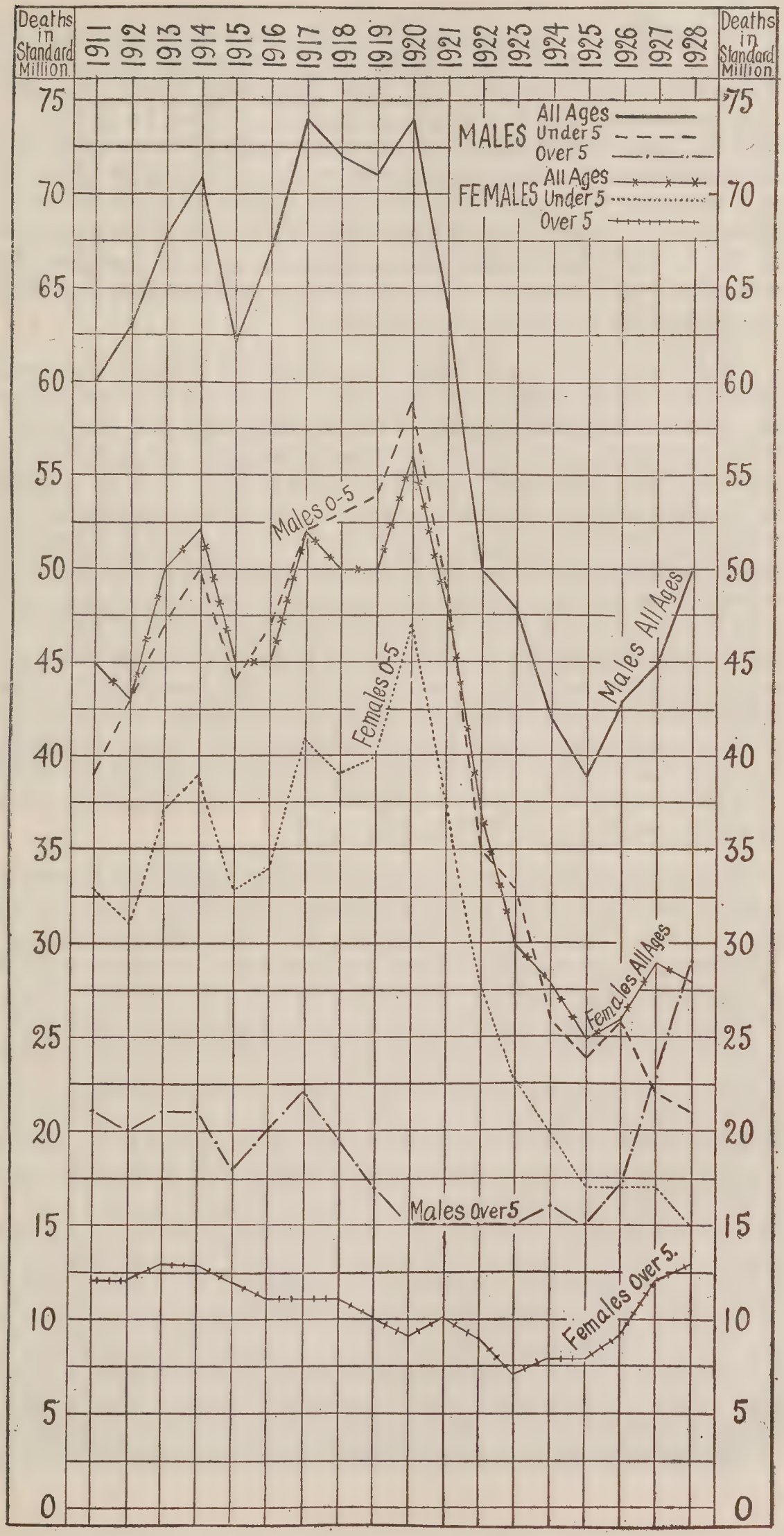
Recent population changes have had a double and discrepant effect upon the crude mortality from syphilis. The great decrease of young children has tended to reduce this rate, and the increase in later middle life (Statistical Review, 1927, Diagram 3) to increase it. The result has been that in different years, even since 1910, the effect of standardization has differed as one or other consideration predominated, the two rates comparing as follows for each sex :—

	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Males : Crude	60	62	67	69	61	64	70	65	62	64	57	47	47	42	39	42	46	53
Standardized ..	60	63	68	71	62	67	74	72	71	74	64	50	48	42	39	43	45	50
Females : Crude ..	43	41	47	48	41	41	45	42	38	44	38	31	27	25	23	23	26	26
Standardized	45	43	50	52	45	45	52	50	50	56	48	37	30	28	25	26	29	28

Thus while for females the standardized rate has throughout been higher than the crude rate, the difference reaching a maximum in 1919 and then declining again, the crude rate for males was unaffected by standardization in 1911, and increased to a gradually growing extent during 1912–20 and then to a diminishing extent in 1921–26, but since then has been slightly decreased. These changes make it very necessary to standardize in order to observe the true trend of syphilis mortality. The crude rates (hitherto exclusively studied) show, for instance, 1917 as the peak year of recent syphilis mortality for males, and 1914 for females, though 1920, apparently the true peak year, is as high for males and higher for females after standardization.

It should perhaps be pointed out that as the rates compared in Table XLVIII are based on the standard population of 1901, their ratios differ, especially as regards its third section, from those derivable from comparison of the numbers of deaths in each year. The proportion of juvenile deaths has fallen of late years both because of greater fall in juvenile than in adult mortality and

Diagram III.—England and Wales—Syphilis, 1911–28 : Deaths in Standard Million at all Ages, under 5 and over 5 years of age.



because of the decreasing proportion of young children in the population. The juvenile rates tabulated, representing the deaths at 0–5, at the rates recorded for this age group each year, in the 1901 standard million population, ignore the latter of these two influences and so display less decline than the proportion of juvenile to total deaths recorded. Thus whereas in 1911 the deaths of males at 0–5 were 64 per cent. of those at all ages, and of females 70 (persons 67) or just a little below the standardized ratios shown in Table XLVIII, in 1928 this proportion was 30 per cent. for males and 39 for females (persons 33), or considerably less than the 42 and 54 per cent. in the Table.

In Diagram III the mortalities plotted at 0–5 and 5– represent the deaths which would have occurred, at the recorded mortalities, in the standard million population of 1901, and not the death-rates per million. This has been done as a matter of convenience, for the death-rate recorded at 0–5 so far exceeds that at 5– that both could not well be shown on the same scale, whereas in the curves plotted the comparatively small numbers of the juvenile population largely offset its excess of mortality. The trend of events is, of course, shown equally well by either the deaths in standard population or in a million living at each age. The curves for all ages show 1920 as the year of highest mortality for each sex, 1917 being as high for males but decidedly lower for females. From 1920 to 1925 a great and rapid fall occurred, to the extent of 47 per cent. for males and 55 for females. Since 1925 some increase has again occurred, but mainly in the two years, 1927 and 1928, affected, as pointed out above, by the change in form of death certificate, and exclusively at 5–.

Table XLVIII shows large excess of mortality for males in infancy as well as in maturity, but always, naturally, larger at the higher ages. Still, the fact that at 0–5, when infection and environment are presumably similar for both sexes, constant excess is recorded for males to the extent of 18–53 per cent., shows presumably that the excess mortality of males at higher ages, 50–123 per cent., is not entirely to be accounted for by differences of infection and environment, but is to a large extent a consequence of the lesser resistance of the male. Male excess at all ages, which fell to a minimum in 1920, immediately before the great reduction of mortality during the following five years, has now increased again to the highest point in the table, as also at 5–; and it is to be hoped that this does not indicate increased infection of adult males, to be followed in due course by increased mortality of females and infants. Diagram III indicates that the increase of the last three years in adult mortality has affected males more than females, and that this excess is out of proportion to the relative extent of the rates in each case becomes evident when they are plotted on the logarithmic scale. This sudden increase, for each sex, of the rate at 5– while that at 0–5 continues to fall, has for two years now made adult mortality the more

important constituent of the male death-rate, and seems likely very soon to have the same effect for females, though till lately the juvenile rate has always been of much greater (recorded) importance for each sex.

It may seem from Table XLVIII that this decrease in the relative importance of juvenile mortality dates only from 1920, when the total rate reached its maximum, and that during the previous ten years, 1911–20, of gradually increasing mortality, the juvenile proportion had also been slowly increasing for each sex, reaching its maximum in the same year, 1920, as the total death-rate. The juvenile rate has, therefore, both increased and decreased faster, for each sex, than the total, upon which it thus appears to have exercised a dominant influence. From 1911 to 1920 the total rate rose by 23 per cent. for males and 24 for females in consequence of an increase at 0–5 of 51 per cent. for males and 42 for females, notwithstanding a decrease at ages over 5 of 29 per cent. for males and 25 for females. And from 1920 to 1928 the total rate fell by 32 per cent. for males and 50 for females as the result of a fall at 0–5 of 64 per cent. for males and 68 for females, notwithstanding increases at higher ages of 93 per cent. for males and 44 for females. This dominance of the juvenile rate bids fair to be greatly lessened in the future, partly as a result of the new form of death certificate, but as to its reality in the recent past the ratios quoted leave no room for doubt. The recent reduction of syphilis mortality has occurred wholly at ages under five, that recorded for higher ages being now as high as (females) or higher (males) than in any of the past 18 years.

The reason for the sudden and great decrease, from 1921 onwards, of juvenile mortality, immediately after a long continued period of considerable increase, forms an interesting subject of inquiry on which the facts recorded in registration can scarcely be expected to throw much light. Probably the sanitary administrator will collate it with the activity of the child welfare service initiated on the national scale in 1914 when the system of Treasury grants in aid was instituted, but hampered in its earliest years by war conditions, until and even after the passing of the Maternity and Child Welfare Act of 1918. The correspondence with these dates of the history, as recorded in Table XLVIII, of syphilis mortality at 0–5 is surprisingly precise.

As deaths attributed directly to syphilis form but a minority of those now recognised to result from the disease Table XLIX has been prepared in order to obtain a more comprehensive view of the position by including other forms of return which either always or at least usually imply a syphilitic origin of the fatal condition. So restricted a list as that used must, of course, exclude very many deaths directly consequent upon syphilis, but appraisement of the proportion of deaths from heart disease, arterio-sclerosis, cerebral haemorrhage, etc., which are of this

nature, is much too speculative to be in place here, whereas tabes and general paralysis are now accepted as implying, and aneurysm as usually indicating, syphilitic infection.

Table XLIX.—England and Wales, 1911–1928—Standardized Mortality per Million living, from Syphilis and Diseases of Syphilitic Origin.

		1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
		Rates per million.																	
Males	38 Syphilis ..	60	63	68	71	62	67	74	72	71	74	64	50	48	42	39	43	45	50
	72 Tabes dorsalis	29	29	32	31	31	34	31	28	27	24	26	29	26	26	25	26	26	25
	76 G.P.I. ..	95	96	90	94	92	86	96	84	65	61	59	65	64	55	56	51	54	49
	91(*a*) Aneurysm	51	51	48	46	45	40	37	33	34	36	35	36	34	35	34	32	36	37
	Total ..	235	239	238	242	230	227	238	217	197	195	184	180	172	158	154	152	161	161
Females	38 Syphilis ..	45	43	50	52	45	45	52	50	50	56	48	37	30	28	25	26	29	28
	72 Tabes dorsalis	5	6	5	5	5	4	5	4	3	4	5	5	5	4	5	4	5	4
	76 G.P.I. ..	21	23	20	20	20	17	19	15	12	10	12	13	12	12	11	11	11	10
	91(*a*) Aneurysm	11	9	11	10	11	9	10	7	7	7	8	8	8	7	9	9	9	9
	Total ..	82	81	86	87	81	75	86	76	72	77	73	63	55	51	50	50	54	51
		Ratios per cent.																	
Males	38 Syphilis ..	26	27	29	29	27	29	31	33	36	38	35	28	28	27	25	28	28	31
	72 Tabes dorsalis	12	12	13	13	13	15	13	13	14	12	14	16	15	16	16	17	16	16
	76 G.P.I. ..	40	40	38	39	40	38	40	39	33	31	32	36	37	35	37	34	34	30
	91(*a*) Aneurysm	22	21	20	19	20	18	16	15	17	19	19	20	20	22	22	21	22	23
	Total ..	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Females	38 Syphilis ..	55	53	58	60	55	60	60	66	69	73	66	59	54	55	50	52	54	55
	72 Tabes dorsalis	6	7	6	6	6	5	6	5	4	5	7	8	9	8	10	8	9	8
	76 G.P.I. ..	26	29	23	23	25	23	22	20	17	13	16	20	22	23	22	22	20	19
	91(*a*) Aneurysm	13	11	13	11	14	12	12	9	10	9	11	13	15	14	18	18	17	18
	Total ..	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

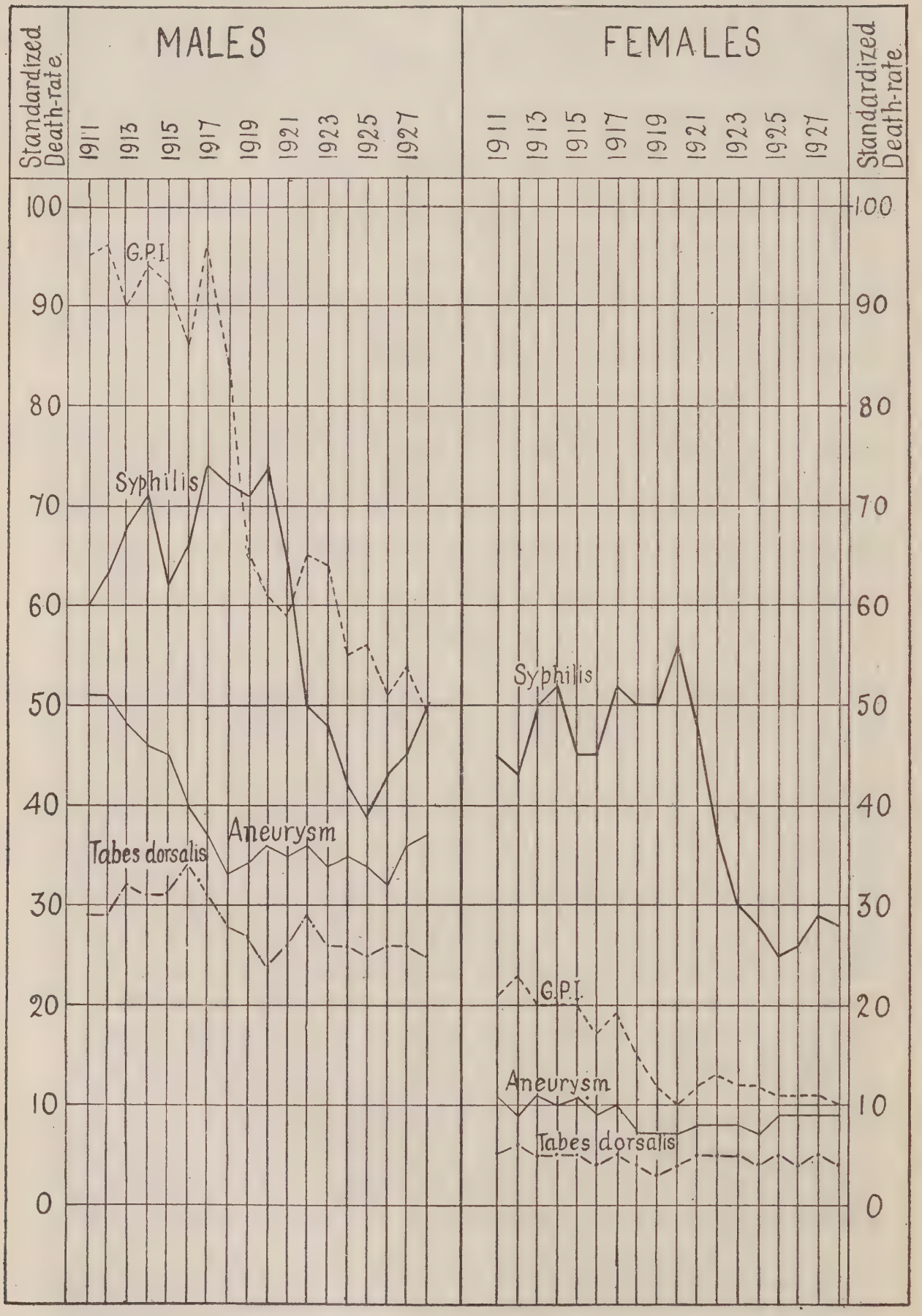
This Table shows the same rapid fall since the war in the combined mortality from the four diseases as is shown in Diagrams III and IV for syphilis. But for each sex the fall (rather greater proportionately for females than for males) occurred rather earlier than that for syphilis, setting in steeply after 1917, whereas that from syphilis starts only in 1921. The syphilis curve in the diagrams, however, is dominated by the infant rate, which is seen from Diagram III to have experienced its chief fall at a later date than that for higher ages, (5–), and for males correspondence in date of fall between syphilis and general paralysis, the largest item in Table XLIX and that showing by far the greatest fall, becomes very close indeed when regard is paid to syphilis mortality at ages over five. Both

stood especially high in 1917, and fell very rapidly (by about one-third) till 1920, since when the syphilis rate remained about stationary till its recent rise with the change of the death certificate, while that for general paralysis has continued to fall slowly. As general paralysis appears, as a rule, some ten to twenty years after syphilitic infection, and then runs about a three years course, changes in its mortality should follow changes in frequency of syphilitic infection by about 20 years or so, though as the course of fatal syphilis so returned (in adults) is also generally protracted there would be nothing surprising, if decreased infection were the cause in both cases, in the simultaneity of the striking changes in the two records—the great fall for both (adult) syphilis and general paralysis in 1917–20. But the concentration of the fall in both cases upon a very limited period of time is probably significant of the cause producing it. The date, 1917–20, seems to point clearly to some influence of the war.

If so it may be assumed with confidence that improved treatment of existing disease and not decreased exposure to infection was responsible. It is quite conceivable that improved treatment, applied in the army on a wholesale scale, might suddenly reduce mortality both from syphilis and general paralysis, whereas attribution of the fall to decrease of infection would imply a great and sudden change in the social habits of the population in the final years of the nineteenth century, of which there is no evidence or likelihood whatever. The effect of a sudden increase, such as is known to have occurred, in thoroughness of treatment, might well be a sudden drop in mortality, whereas decrease of infection could presumably only occur and operate gradually. Moreover the increase of effective treatment is on record, and there is no reason to assume the decrease of infection twenty years earlier required to explain the fall in mortality. This may, therefore, be attributed with confidence to treatment, especially as the most sudden reduction of infection conceivable could not well explain the suddenness of the fall recorded for either form of mortality. For if death in fatal cases be assumed to occur 10–30 years after infection the effect upon mortality of decrease of infection, however sudden, or even of its complete cessation, would be spread over twenty years. The suddenness alone, therefore, of the fall charted in Diagram IV for general paralysis and syphilis points definitely to improvement of treatment as its cause, and this conclusion is supported by the fact that treatment is known to have notably improved, and infection is not known to have notably decreased at the corresponding period.

It is true that the Report for 1923 of the Board of Control states in this connexion that the view of those best able to judge is that this reduction in the incidence of general paralysis is not due to the more effective treatment of syphilis by salvarsan and other similar preparations.

Diagram IV.—Standardized Death-rates at all Ages per Million living, from Syphilis, G.P.I., Aneurysm and Tabes dorsalis.



But there is nothing in the statistical records discussed to associate the fall with any particular form of treatment. Even if salvarsan prevented no deaths either from syphilis or general paralysis the fact remains that the conditions of army life greatly promoted the efficacy of treatment by old remedies as well as new.

The Board of Control, in the report quoted, suggests two causes for the decline there noted in the prevalence and mortality of general paralysis. These are (1) exclusion of certain cases formerly regarded as general paralysis by improved and more rigorous diagnosis, and (2) improvement in the early recognition and treatment of syphilis. Both of these causes must have been in large part associated with the institution in 1916 of the national scheme for treatment of venereal disease, but even this can scarcely account for so dramatic a change in three years as the fall of adult syphilis mortality in 1918–20, with cessation thereafter for syphilis and very great slackening for general paralysis. If this were the explanation the great fall occurred when the V.D. scheme was scarcely on its legs, and has greatly lessened as the scheme has developed. Having regard to the dates it seems reasonable to regard the change as in some way a consequence of the war, and in view of its suddenness to attribute it to the effects of service treatment.

Whatever has brought about the decline one cause sometimes invoked can be dismissed with certainty—the introduction of malarial treatment. As this was begun in this country only in 1922* it evidently cannot account for a fall of mortality occurring in 1918–20.

Of the other two mortalities charted in Diagram IV that from tabes presents a course agreeing well with those of syphilis and general paralysis, while, as perhaps was to be expected, correspondence is less for aneurysm. Even in its case, however, a long period of gradual rise for males was succeeded by a fall in 1912–18, with no improvement since. For females also a period of falling mortality ended with the year 1918. Tabes also displays the termination in 1916 of a long period of gradual increase for males followed by a sharp fall (of 29 per cent.) to 1920, since when the ground gained has barely been maintained. The tabes rates for females are so small that their course could scarcely be expected to have much significance. All these four syphilitic diseases, then, have followed a very similar course, marked by a sudden and relatively great but short lived decline of mortality about or immediately after the period of the war, with little, or in some instances no, improvement since. Whether the explanation suggested is correct or not, the facts recorded appear to call for some explanation involving the profound influence on men's lives of the events of the period.

The relative importance at different dates of the four syphilitic diseases dealt with is indicated in the lower section of Table XLIX. On the whole this has remained fairly constant throughout, but

* (Report of Board of Control, 1925, page 97.)

the sudden fall in general paralysis mortality between 1917 and 1920, while the syphilis rate was maintained by infant deaths, reduced the general paralysis proportion during those years from 40 to 31 per cent. for males and from 22 to 13 per cent. for females. Other changes are of less importance.

42 (1). **Vaccinia.**—The number of deaths classed to this cause increased from one in 1926 and in 1927 to 18 in 1928, including eight males, all of 15 or under, and 10 females, of whom one was aged 66 and nine 20 or under. The increase is chiefly accounted for by post-vaccinal encephalitis, 13 deaths being so classified in 1928, and none in 1927. The 13 deaths include six of males, at ages 6, 10, 10, 13, 14, 14, and seven of females, aged 14 months, and 4, 8, 9, 9, 12 and 19 years. Thus previous experience is confirmed that infants are largely immune to this special risk, and in the case of the single apparent exception to this rule—the death of a female aged 14 months—though it was stated by the certifier in response to inquiry that " the child gradually developed signs of encephalitis following vaccination," inquiry by the Ministry of Health showed that the vaccination was performed a year before death. But in any case the 12 deaths of children of school age from this cause, six boys and six girls, form a new feature of the 1928 returns, and account for most of the increase in deaths classed to vaccination from 1 to 18. A table in the Report of the Chief Medical Officer of the Ministry of Health shows, indeed, that more deaths from acute nervous disease following vaccination came under the notice of the Ministry in the third quarter of 1923 than in the quarter (second) of 1928 chiefly affected (22 as against 16), but the certification of as many as 13 deaths as due to this condition in 1928 is a new feature in our records, probably connected with the attention directed to the subject during the previous seven years.

The five other deaths classed to vaccinia include three infants of 1 and one of 5 months, and a female of 66. The deaths of two infants aged 1 month, one male and one female, were attributed to generalised vaccinia, and that of the third, a male, " to natural causes probably accelerated by vaccination owing to the low state of his health." The death of the female of 5 months is attributed to status lymphaticus accelerated by the stress of vaccination. The female aged 66 is stated to have been quite well when vaccinated and to have had a severe reaction with high temperature followed by sudden collapse from pulmonary infarct.

In addition to the 18 deaths allocated to vaccinia there were 11 others not so classed on the certificates of which reference was made to recent vaccination. Five of these, two male and three female infants, of whom the oldest was aged seven months, were attributed to septic infection of the vaccination wound, and were classed to the septic condition, as in other fatal cases of septic contamination of slight injuries. In two other cases record

of vaccination was made merely as a matter of interest, and without implication that the vaccination was regarded as a cause of the death. A similar case of the death of a male aged 11 from " Encephalitis and acute myelitis, cause unknown. Vaccinated 14 days before admission, which may have had some relation to the condition," was classed to encephalitis because the medical attendant did not take the responsibility of relating this to the vaccination. The other three deaths not classed to vaccinia were of a female of 33 (pulmonary tuberculosis), a female of 14 months (whooping cough), and a female of three months (marasmus). In the latter case the certifier writes : " I thought the child in such a weakly state of health that the reaction to normal vaccination was such as to be a contributory cause."

43–49. **Cancer.**—The deaths ascribed to cancer during 1928 number 56,253—26,013 of males and 30,240 of females. For both sexes these numbers are the highest yet recorded.

Of these deaths 46,727 were referred to carcinoma, 2,791 to sarcoma, and 6,735 to " cancer " not otherwise defined. For each sex the number of deaths from carcinoma is the largest, and that from undefined " cancer " the smallest since the record of this distinction started in 1901. There were more deaths of males from sarcoma in 1927, but, for females, the figure for 1928 is the highest yet returned. Proportionately, however, sarcoma has been losing ground of late years, as compared with carcinoma, and its ratio of 49 per 1,000 total causes in 1928 is the lowest yet recorded, and the first of less than 5 per cent. Apart from this change, which presumably reflects a corresponding change of professional view as to the significance of histological findings in relation to the very difficult question of tumour classification, these figures provide an interesting record of transfer from " cancer " undefined to carcinoma, forming part, no doubt, of the general increase of precision in certification. In 1901, when the record begins, 46·2 per cent. of the deaths were ascribed to carcinoma, and 47·7 to " cancer," the balance of 6·1 being formed by sarcoma. But next year, 1902, carcinoma exceeded " cancer," and with one interruption every subsequent year has recorded an increase under carcinoma and a decrease under " cancer," until in 1928 their proportions are 83·1 and 12·0 per cent. The interruption referred to is of special interest. Occurring in 1915 and 1916, it was evidently a consequence of the war. In 1915 the proportion of " cancer " deaths rose from 291 (1914) to 295 per 1,000, and in 1916 to 299, returning to its pre-war level only in 1918. At the same time carcinoma fell from 653 per 1,000 in 1914 to 649 in 1915, and regained its previous weight only in 1918. Two possible explanations suggest themselves, dependent respectively on war psychology and on war personnel. It seems possible that at such a time precision of statement may have seemed less worth while than usual, but a more likely explanation would associate this temporary reversal of normal

tendencies with the recall to active professional service of an older generation of practitioners naturally certifying in the terms of their own day.

The standardized death-rate for males in 1928 amounts to 1,032 per million, and that for females to 1,000. Both these rates are higher than for any previous year. *See* Table XLI, 1927, which also shows that the rate for males first exceeded that for females in 1924, and has retained its excess ever since, and that the interruption during and after the war of increase in recorded mortality for each sex, which lasted for males from 1915 to 1919, and for females from 1914 to 1924, has now come to an end. But though mortality has been higher for males for the last five years Tables 4 and 5 show that the number of deaths and the crude death-rate remain appreciably higher for females.

This excess is due to the greater average age of the female population, though it is now small compared with what it used to be. The mortality from cancer as a whole is compared by sex and age in Table LI for England and Wales and its chief classes of area, and in somewhat greater detail in Table L for England and Wales only, with record of the degree of difference in sex mortality at the various ages.

Table L.—England and Wales: Mortality from Cancer (All Sites), 1928.

	Mortality per Million.			Sex Ratio.		
	Males.	Females.	Persons.	Males.	Females.	Persons.
All Ages { Crude ..	1,377	1,469	1,425	—	—	—
All Ages { Standardized	1,032	1,000	1,011	—	—	—
0—	40	37	38	1,053	974	1,000
5—	17	15	16	1,063	938	1,000
15—	49	36	43	1,140	837	1,000
25—	123	166	146	842	1,137	1,000
35—	428	790	624	686	1,266	1,000
45—	1,624	2,150	1,903	853	1,130	1,000
55—	4,737	4,131	4,418	1,072	935	1,000
65—	9,964	7,853	8,803	1,132	892	1,000
75—	13,551	12,047	12,635	1,072	953	1,000

It will be seen that the rates for males are in excess at all ages under 25 and over 55, with a period of continuous female excess from 25 to 55, attaining a high maximum at its middle decennium, 35–45, when the rate for females is 85 per cent. higher than that for males. This is the time of life when, as shown by Table LIII, the share of the two chief sex-organ sites, breast and uterus, in the cancer mortality of females is at its highest, the combined mortality for the two sites being above the mean for all ages at 25–65, with highest excess at 35–45, when excess for females is greatest. The percentage share of the breast and uterus in the total cancer mortality of females, as recorded in Table LIII, is :—

All ages	0–	25–	35–	45–	55–	65–	75–	85–
34·4	2·6	41·6	53·8	48·1	35·9	26·2	23·3	25·8

Apart from mortality for which the sex-organs are responsible the rates for males are higher than those for females at all stages of life, and it is just when this distinctive type of cancer in females is of chief importance that their total mortality exceeds that of males.

Table LI contains the usual annual statement of cancer mortality distribution by sex, age, and class of area. Its features are much the same as in previous years.

Table LI.—Cancer.—Death-rates* per 100,000 Living, 1901–10, 1911–20, 1927 and 1928.

Age.	England and Wales.				1928.				
	1901–10	1911–20	1927.	1928.	London.	County Boroughs	Other Urban Districts	Rural Districts	All Urban Districts
MALES.									
All Ages—									
Crude ..	77	99	133	139	157	139	136	134	140
Standardized	78	90	102	103	121	115	102	83	110
0– ..	2	2	2	2	3	3	2	3	2
15– ..	4	4	5	5	7	5	5	4	5
25– ..	11	11	12	12	14	13	12	11	12
35– ..	41	42	42	43	55	46	39	36	45
45– ..	155	168	161	163	189	180	155	131	171
55– ..	390	444	467	474	549	539	458	375	504
65– ..	668	800	994	996	1,166	1,139	987	792	1,072
75 and up	787	973	1,317	1,355	1,586	1,464	1,439	1,122	1,469
FEMALES.									
All Ages—									
Crude ..	103	117	142	147	148	146	147	148	147
Standardized	94	96	98	100	103	109	99	87	104
0– ..	2	2	2	2	3	2	2	3	2
15– ..	3	3	4	4	4	4	4	3	4
25– ..	17	16	16	17	19	17	17	14	17
35– ..	85	79	76	79	79	87	76	70	81
45– ..	232	227	208	215	219	227	215	193	220
55– ..	441	438	417	413	423	456	409	354	430
65– ..	666	711	774	785	817	888	769	669	823
75 and up	790	919	1,171	1,205	1,253	1,298	1,233	1,055	1,260
PERSONS.									
All Ages—									
Crude ..	90	108	138	143	152	143	141	141	143
Standardized	87	93	100	101	111	112	100	85	106
0– ..	2	2	2	2	3	2	2	3	2
15– ..	4	4	4	4	5	4	4	3	4
25– ..	14	13	14	15	17	15	14	13	15
35– ..	64	61	61	63	69	68	60	54	65
45– ..	195	198	186	190	206	205	187	164	197
55– ..	417	441	441	442	482	495	432	364	465
65– ..	667	751	873	880	968	998	866	728	933
75 and up	789	940	1,228	1,264	1,372	1,358	1,311	1,084	1,337

* Civilians only from 1915 onwards.

As usual, the mortality recorded is highest in London and the county boroughs, and lowest in the rural districts. These statements apply without exception to all the twelve years (1911–14 and 1921–28, the necessary population estimates for 1915–20 not being available) for which this comparison can now be made; but in 1928 the rate for the county boroughs has for the first time displaced that for London from the highest position.

Cancer by Site.—The parts of the body affected by fatal cancer in 1928 are shown in Table LII in greater detail than that provided by the international classification, six out of its seven headings (Nos. 43–49) relating to cancer being subdivided according to a scheme approved by the Director of the Imperial Cancer Research Fund.

Table LII.—England and Wales, 1928—Sites of Fatal Cancer.

		All Ages.	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85
		DEATHS OF MALES.															
	All Sites	**26,013**	**64**	**58**	**174**	**345**	**362**	**691**	**1,310**	**2,403**	**3,459**	**4,473**	**4,716**	**3,908**	**2,576**	**1,095**	**379**
43	Lip	304	—	—	—	2	2	2	9	17	34	29	50	65	53	23	18
	Tongue	1,185	1	—	1	1	5	12	60	113	213	265	230	160	78	33	13
	Mouth and tonsil ..	797	—	1	1	2	2	12	28	83	143	157	157	119	62	24	6
	Jaw	504	1	—	2	2	6	8	30	45	72	96	88	83	47	12	12
	Total	2,790	2	1	4	7	15	34	127	258	462	547	525	427	240	92	49
44	Pharynx	319	1	2	6	4	3	5	13	38	50	61	63	37	29	5	2
	Œsophagus	1,670	—	—	—	—	5	17	71	171	247	371	334	251	120	65	18
	Stomach	5,774	—	—	7	68	85	228	368	607	800	1,000	1,056	795	510	193	57
	Liver and gall bladder..	1,554	6	1	3	17	14	18	77	138	175	216	328	266	184	89	22
	Total	9,317	7	3	16	89	107	268	529	954	1,272	1,648	1,781	1,349	843	352	99
45	Mesentery and peritoneum	134	2	5	5	11	8	6	8	9	19	22	17	13	5	3	1
	Intestines	3,345	1	2	9	37	55	62	115	245	426	546	623	590	407	176	51
	Rectum and anus ..	2,677	1	1	10	27	30	49	103	217	309	456	538	455	318	129	34
	Total	6,156	4	8	24	75	93	117	226	471	754	1,024	1,178	1,058	730	308	86
47	Breast	51	—	—	—	—	1	2	3	3	6	13	5	8	8	2	—
48	Penis	153	—	—	—	2	1	3	8	11	17	15	26	26	23	13	8
	Scrotum	78	—	—	—	2	—	3	7	5	13	14	12	14	5	3	—
	Other skin	652	1	1	—	8	9	15	16	45	53	76	79	105	113	82	49
	Total	883	1	1	—	12	10	21	31	61	83	105	117	145	141	98	57
49	Larynx	831	—	—	—	2	7	14	42	101	147	172	159	114	53	13	7
	Lung and pleura ..	814	1	3	16	28	24	66	101	117	120	155	94	49	29	9	2
	Pancreas	733	—	—	—	7	15	34	47	79	110	139	123	93	58	20	8
	Kidneys and suprarenal glands	298	26	9	5	7	6	15	28	42	43	43	35	23	8	8	—
	Bladder	812	1	—	—	6	9	14	27	62	91	136	155	152	108	38	13
	Prostate	1,353	1	1	—	—	1	5	11	46	96	213	280	310	245	104	40
	Testis	128	—	—	13	33	16	10	10	12	6	5	9	5	5	3	1
	Brain and meninges ..	91	3	5	7	2	6	15	12	18	7	6	6	1	2	1	—
	Bones (jaw excepted) ..	416	7	14	51	30	17	18	32	26	43	53	46	42	23	12	2
	Other specified organs..	873	9	12	31	38	26	48	63	109	138	130	116	81	40	22	10
	Abdominal cavity, organ unspecified	78	2	—	1	1	2	2	1	4	18	11	13	11	6	4	2
	Other and undefined ..	389	—	1	6	8	7	8	20	40	63	73	74	40	37	9	3
	Total	6,816	50	45	130	162	136	249	394	656	882	1,136	1,110	921	614	243	88

Table LII.—England and Wales, 1928—Sites of Fatal Cancer.—*cont.*

		All Ages.	0–	5–	15–	25–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–	85–
		DEATHS OF FEMALES.															
	All Sites	**30,240**	**58**	**50**	**127**	**545**	**777**	**1,533**	**2,361**	**3,200**	**3,644**	**4,022**	**4,338**	**3,977**	**3,119**	**1,659**	**830**
43	Lip	25	—	—	—	—	—	1	—	1	—	3	7	5	3	1	4
	Tongue	129	—	—	—	3	1	7	14	10	23	19	13	22	8	5	4
	Mouth and tonsil ..	103	1	2	4	1	1	4	9	5	12	15	13	15	12	6	3
	Jaw	165	—	3	3	1	4	10	10	17	32	19	17	25	15	6	3
	Total	422	1	5	7	5	6	22	33	33	67	56	50	67	38	18	14
44	Pharynx	86	—	—	1	2	2	8	3	21	10	6	11	11	8	2	1
	Œsophagus	574	—	—	—	2	11	23	43	75	66	85	81	85	52	33	18
	Stomach	5,009	1	1	7	61	72	138	257	410	557	737	909	826	620	288	125
	Liver and gall bladder..	2,187	4	2	5	11	18	32	103	155	251	312	352	389	339	148	66
	Total	7,856	5	3	13	76	103	201	406	661	884	1,140	1,353	1,311	1,019	471	210
45	Mesentery and peritoneum	213	1	5	1	8	1	16	9	28	28	32	35	32	11	4	2
	Intestines	4,329	—	—	11	50	67	115	179	323	396	587	717	744	636	339	165
	Rectum and anus ..	1,782	—	1	12	37	28	61	94	131	209	251	309	260	216	124	49
	Total	6,324	1	6	24	95	96	192	282	482	633	870	1,061	1,036	863	467	216
46	Ovary and Fallopian tube	1,127	1	1	13	41	46	113	156	173	157	135	120	83	56	22	10
	Uterus	4,525	—	—	4	127	231	398	569	672	624	562	503	420	255	117	43
	Vagina and vulva ..	356	—	—	1	4	7	18	25	19	47	41	48	49	45	34	18
	Total	6,008	1	1	18	172	284	529	750	864	828	738	671	552	356	173	71
47	Breast	5,878	—	—	2	100	192	422	633	800	811	753	688	565	456	285	171
48	Skin	502	2	3	3	2	7	14	7	24	32	34	49	63	89	93	80
49	Larynx	227	—	—	1	2	7	13	28	34	38	34	28	22	13	4	3
	Lung and pleura ..	314	1	2	3	7	13	23	28	34	56	44	44	29	20	9	1
	Pancreas	649	1	—	—	4	13	15	41	58	89	97	113	98	67	35	18
	Kidneys and suprarenal glands	239	27	5	2	8	4	17	19	24	28	29	28	20	15	9	4
	Bladder	365	—	—	1	—	5	13	16	29	36	56	66	53	49	31	10
	Brain and meninges ..	63	3	1	5	9	4	7	7	11	7	3	6	—	—	—	—
	Bones (jaw excepted)..	388	8	16	25	25	15	13	36	39	40	46	46	35	28	10	6
	Other specified organs..	608	7	3	17	28	19	33	50	68	60	88	73	61	59	30	12
	Abdominal cavity, organ unspecified	193	—	2	—	4	2	7	7	19	19	16	31	37	29	12	8
	Other and undefined ..	204	1	3	6	8	7	12	18	20	16	18	31	28	18	12	6
	Total	3,250	48	32	60	95	89	153	250	336	389	431	466	383	298	152	68

From this table a comparison has been prepared of the relative frequency of disease of different sites at various ages, with record of the proportionate share for each site of the total cancer mortality for the age in question, in the shape of Table LIII.

In this table the twelve sites of chief importance for each sex have been dealt with by showing for each, at each age distinguished, its rank in order of frequency, and the proportionate extent of its contribution to total cancer mortality, taking the latter as 1,000. In all cases where sites other than those dealt with in the table rank above any of them at any age these sites are enumerated in footnotes, with statement of their share in the total mortality at that age. Thus for males of 75–85 the lung and pleura, tenth in order of importance at all ages, ranks fifteenth only, and the three sites, not included in the twelve dealt with, which are of greater importance at 75–85, with the share per 1,000 total of each, are stated in the footnote.

Table LIII.—England and Wales, 1928—Cancer by Site and Age. Deaths from Cancer of various Sites at different Ages, showing Sites in Order of Frequency, and Share of each Site in total Mortality from Cancer.

MALES.

	All Ages.		0–		25–		35–		45–		55–		65–		75–		85–	
	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.
Stomach	1	222·0	11	24	1	197	1	297	1	263	1	227	1	215	1	192	1	150
Intestine	2	128·6	6	40	2	107	2	111	2	97	2	123	2	141	2	159	3	135
Rectum and anus ..	3	102·9	6	40	6	78	4	75	3	86	3	96	3	115	3	122	5	90
Œsophagus ..	4	64·2	—	—	—	—	11	21	4	65	4	78	6	68	7	50	7	48
Liver and gall bladder	5	59·7	9	34	7	49	7	30	6	58	6	49	4	69	5	75	6	58
Prostate	6	52·1	13	7	—	—	20	6	16	15	8	39	5	68	4	95	4	106
Tongue	7	45·6	13	7	18	3	15	16	7	47	5	60	7	45	9	30	9	34
Skin..	8	33·9	13	7	8	35	8	29	11	25	13	24	11	30	6	65	1	150
Larynx	9	31·9	—	—	14	6	12	20	8	38	7	40	10	32	13	18	13	18
Lung and pleura ..	10	31·3	3	68	5	81	3	86	5	59	10	35	14	17	15	10	15	5
Bladder	11	31·2	17	3	12	17	10	22	12	24	12	29	8	36	8	40	9	34
Mouth and tonsil ..	12	30·6	13	7	14	6	16	13	10	30	9	38	9	32	10	23	14	16
Other sites.. ..		169·0		766(*a*)		418(*b*)		249(*c*)		183(*d*)		160(*e*)		143(*f*)		(140*g*)		169(*h*)
All sites		1000·0		1000		1000		1000		1000		1000		1000		1000		1000

(*a*) Including bones 243, kidney and adrenal 135, brain and meninges 51, testis 44, mesentery and peritoneum 40, pharynx 30 and jaw 10.
(*b*) Including testis 96, bones 87, mesentery and peritoneum 32, kidney and adrenal 20, pancreas 20, pharynx 12, lip 6, jaw 6, and brain and meninges 6, per 1,000.
(*c*) Including pancreas 47, bones 33, testis 25, kidney 20, brain and meninges 20, mesentery and peritoneum 13, jaw 13, and pharynx 8, per 1,000.
(*d*) Including pancreas 34, jaw 20, kidney and adrenal 19, and bones 16, per 1,000.
(*e*) Including pancreas 31 per 1,000.
(*f*) Including pancreas 25, and jaw 20, per 1,000.
(*g*) Including pancreas 21, lip 21, and jaw 16, per 1,000.
(*h*) Including lip 47, jaw 32, pancreas 21 per 1,000.

FEMALES.

	All Ages.		0–		25–		35–		45–		55–		65–		75–		85–	
	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.	Order.	Share.
Breast	1	194·4	15	9	2	183	2	266	1	258	1	204	3	151	3	155	1	206
Stomach	2	165·6	7	38	3	112	3	91	3	120	2	169	1	209	2	190	3	151
Uterus	3	149·6	14	17	1	233	1	272	2	223	3	155	4	111	5	78	7	52
Intestine	4	143·2	5	47	4	92	4	79	4	90	4	128	2	176	1	204	2	199
Liver and gall bladder	5	72·3	5	47	8	20	7	22	6	46	5	73	5	89	4	102	5	79
Rectum and anus..	6	58·9	4	55	6	68	6	38	7	40	6	60	6	68	6	71	6	59
Ovary and Fallopian tube	7	37·3	3	64	5	75	5	69	5	59	7	38	8	24	12	16	11	12
Pancreas	8	21·5	16	4	13	7	10	12	9	18	8	24	7	25	8	21	8	22
Œsophagus.. ..	9	19·0	—	—	16	4	9	15	8	21	9	20	9	20	9	18	8	22
Skin..	10	16·6	9	34	16	4	13	9	17	6	14	9	11	14	7	38	4	96
Bones (jaw excepted)	11	12·8	1	209	7	46	10	12	10	14	12	11	13	10	13	8	13	7
Bladder	12	12·1	16	4	—	—	16	8	13	8	11	12	10	14	10	17	11	12
Other sites.. ..		96·7		472(*a*)		156(*b*)		107(*c*)		97(*d*)		97(*e*)		89(*f*)		82(*g*)		83(*h*)
All sites		1000·0		1000		1000		1000		1000		1000		1000		1000		1000

(*a*) Including kidney and adrenal 145, brain and meninges 38, mouth and tonsil 30, mesentery and peritoneum 30, jaw 26, lung 26, pharynx 4, vagina and vulva 4, and larynx 4, per 1,000.
(*b*) Including brain and meninges 17, mesentery and peritoneum 15, kidney and adrenal 15, lung and pleura 13, vagina and vulva 7, tongue 6, pharynx 4, larynx 4, mouth and tonsil 2, and jaw 2, per 1,000.
(*c*) Including lung and pleura 16, vagina and vulva 11, kidney and adrenal 9, and larynx 9, per 1,000.
(*d*) Including larynx 11, lung 11, vagina and vulva 8, kidney and adrenal 8, and mesentery and peritoneum 7, per 1,000.
(*e*) Including lung and pleura 13, vagina and vulva 11, and larynx 9, per 1,000.
(*f*) Including vagina and vulva 12 per 1,000.
(*g*) Including vagina and vulva 17 per 1,000.
(*h*) Including vagina and vulva 22 per 1,000.

The deaths at all ages under 25 amount to less than 1 per cent. of the whole. As indicated by Table LII, they are more numerous for males than for females, and the sites involved differ considerably from those chiefly concerned at the "cancer ages." This is associated with a considerable difference in the nature of the growths, 74·2 per cent. being sarcomatous, as against 4·9 at all ages jointly.

With this distinctiveness of nature is associated a very definite distinctiveness of site for these juvenile growths, the bones ranking first and the kidney and adrenal second in each sex, while deaths from cancer of the sites of chief importance in later life are relatively few. The lung ranks third for males and the ovary for females at these ages, both with between 6 and 7 per cent. of the total mortality. At all higher ages for males and at 65–75 for females the stomach ranks first, causing 22 and 17 per cent. of the total deaths in the two sexes. At 35–45 30 per cent. of deaths of males are from gastric cancer, but in later life this proportion regularly declines to 15 at 85–. But the stomach only ranks first for males because the total intestine as a site is subdivided to show the rectum separately. The intestine as a whole ranks above the stomach at all ages over 65, as well as at 0–25. For females also the intestine as a whole is the site of chief importance, ranking above the stomach at every age, and at ages over 65 above the breast, which at all ages, at 45–65, and at 85– heads the list of female sites as presented. The share of the breast in female cancer mortality is highest at 35–45, even though it holds but second place, ranking after the uterus, as also at 25–35. In later life uterine cancer becomes of much less importance, its rank and share alike falling uninterruptedly to seventh place, with 5 per cent. of total mortality, at 85–. In each sex the intestine is of chief importance at 75–85, when without the rectum it ranks first for females and second only to the stomach for males, and when the total intestine accounts for 28·1 and 27·5 per cent. of all deaths of males and females respectively.

The table brings out various other points of some interest, as, for instance, the early type of ovarian and in contrast the late type of prostatic cancer, the share of the latter increasing with each advance of age from 6 per 1,000 at 35–45 to 106 at 85–, while the share for the ovary falls, also without interruption, from 75 per 1,000 at 25–35 to 12 at 85–. Similarly the skin, which includes the external genital organs of the male but not of the female, becomes of much importance as a site of cancer only in old age. In the male it ranks eighth among the sites for the whole of life, only rising to a higher position at 75–85, when it comes sixth, with 6·5 per cent. of all deaths, and at 85–, when, with 15 per cent. of all deaths, it shares first place with the stomach. In the female also it ranks highest at the same ages, seventh at 75–85 with 3·8 per cent. of all deaths, and

fourth at 85– with 9·6 per cent., while the vagina and vulva also become of increasing importance at each age from 45–55 (0·8 per cent. of all deaths) to 85– (2·2 per cent.).

But consideration of these facts for all sites except those of chief importance may with advantage be postponed until comparison of the experience of a series of years makes it possible to distinguish how far the various features brought out by the table are of a permanent nature.

In addition to Table LII, which has been given for many years, a table (No. LIV) now appears for the second time, showing the recent history of mortality of males and females from cancer of the more important sites. In view of the importance of site distinction and of the misleading nature of crude cancer death-rates at a time when the proportion of persons of the cancer ages is rapidly increasing, all the rates in this table have been standardized to render those for different periods and sexes comparable with each other.

Table LIV.—Cancer Mortality.—Rates per Million Population (Standardized) for the more important Sites for each Sex 1901–10, 1911–20, 1926, 1927 and 1928.

	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
	All Sites.		Lip.		Tongue.		Mouth and Tonsil.		Jaw.	
1901–10	784	942	12·8	0·8	43·1	4·4	?	?	22·6	6·9
1911–20	897	959	12·6	0·7	50·8	4·3	23·5	3·0	25·1	7·2
1926	1,011	995	10·6	0·6	43·7	3·7	29·6	4·1	21·0	6·9
1927	1,018	984	11·9	1·0	46·6	4·3	29·5	3·4	21·1	6·0
1928	1,032	1,000	12·3	0·7	45·5	4·2	30·5	3·5	19·6	5·5
	Pharynx.		Œsophagus.		Stomach.		Liver.		Gall-bladder.	
1901–10	?	?	51·2	14·6	167·2	133·0	?	?	?	?
1911–20	10·8	3·0	60·6	16·5	186·4	139·0	87·1	98·0	6·0	11·6
1926	13·1	3·1	65·4	17·8	222·2	163·2	61·2	59·8	9·1	17·7
1927	13·2	2·8	60·7	18·0	229·0	157·0	55·8	52·1	8·3	17·6
1928	12·6	2·9	64·3	18·7	227·4	161·5	51·8	52·6	9·5	16·9
	Mesentery and Peritoneum.		Intestine.		Rectum.		Ovary and Fallopian Tube.		Uterus.	
1901–10	8·2	15·8	63·5	72·3	79·8	55·9	—	19·2	—	?
1911–20	6·0	12·0	96·8	109·2	93·6	59·3	—	24·3	—	174·4
1926	5·6	9·3	131·5	135·4	107·2	59·7	—	35·7	—	156·4
1927	4·8	7·3	132·0	131·8	105·7	60·3	—	38·9	—	155·1
1928	5·8	7·3	132·5	138·5	105·7	58·0	—	39·2	—	154·9
	Breast.		Rodent Ulcer.		Penis.		Scrotum.		Other Skin.	
1901–10	1·5	158·4	?	?	?	—	?	—	?	?
1911–20	1·6	170·8	6·7	4·3	6·6	—	2·4	—	17·6	10·9
1926	1·7	184·3	7·5	4·8	6·9	—	2·7	—	18·1	9·3
1927	1·6	193·5	6·5	5·2	6·4	—	3·0	—	18·8	10·3
1928	1·9	196·2	9·0	5·7	6·1	—	3·1	—	18·2	9·9
	Larynx.		Lung.		Pancreas.		Kidney and Suprarenals.		Bladder.	
1901–10	?	?	10·2	7·0	14·5	11·8	8·4	7·6	?	?
1911–20	23·9	6·0	12·7	7·0	16·7	13·1	9·1	7·2	28·2	9·7
1926	33·5	7·3	23·3	9·2	26·0	21·2	11·4	8·8	30·0	11·1
1927	31·7	6·9	26·8	9·7	30·3	20·4	12·2	9·6	30·5	11·6
1928	31·8	7·6	32·0	10·4	28·8	21·0	12·5	9·0	32·0	11·9
	Prostate.		Testis.		Bones.		Mediastinum.			
1901–10	11·8	—	?	—	?	?	8·1	4·5		
1911–20	26·5	—	4·9	—	15·7	12·0	9·2	4·6		
1926	47·9	—	5·2	—	17·3	13·1	13·3	6·0		
1927	47·8	—	7·1	—	18·1	11·7	12·9	6·0		
1928	53·8	—	6·3	—	18·6	14·6	13·3	5·4		

Tongue.—The rate has fallen slightly for each sex, for males from 46·6 per million in 1927 to 45·5, and for females from 4·3 to 4·2. The males rate rose gradually from 38·1 (standardized) in 1901 to 53·4 in 1919, then fell gradually to 43·7 in 1926, so it is still higher than in that year, though before 1926 it is necessary to go back to 1907 (43·6) to find a rate lower than that of 1928.

Oesophagus.—The rate for males has risen from 60·7 to 64·3, and the much lower rate for females has also increased a little. For both sexes, recorded mortality is rising steadily, the rate for each of the last three years exceeding that of 1911–20, which in turn exceeded 1901–10.

Stomach.—This site accounts for more mortality than any other, and shows a 41 per cent. excess for males.

Liver.—The rate continues to fall, presumably as a result of increasing assignment of growths to their primary site with increase of precision in the form of certification. This change has affected females more than males, and whereas in 1911–20 there was a 13 per cent. excess for females, this has now fallen to 2 per cent.

Gall-Bladder.—This is the chief example of a site common to both sexes which accounts for a higher death-rate in the female sex, whose mortality is approximately double that of males. No doubt this results from the greater liability of females to gall-stones, their standardized mortality from the latter condition being consistently double or more than double that of males.

Intestine.—The rates for this site are rising rapidly, showing an increase since 1901–10 of 109 per cent. for males, and 92 for females. Slight excess for females is the rule (not applying in 1927). Improved diagnosis may doubtless account for much of the increase.

Rectum.—Mortality is returned as increasing considerably for males (32 per cent. since 1901–10) but not for females (4 per cent. increase). The contrast in rapidity of increase between this accessible site and the inaccessible remainder of the intestine will be noted. The rate for males is now 82 per cent. in excess of that for females, and if this contrast could be related to any known variation of conditions between the sexes light might be thrown upon the antecedents of the condition.

Ovary and Fallopian tube.—Rapid increase of this form of cancer, noted on page 83 as affecting especially early life, continues, the rate for 1928 being the highest in the table, and more than double that for 1901–10.

Uterus.—Steady decline of this mortality, on the other hand, continues, the rate for 1928 being the lowest in the table, and 11 per cent. below that for 1911–20. The effect of improvement in treatment may be of special importance here.

Breast.—If improved technique in treatment is responsible for the fall in uterine cancer mortality, it has not had this effect in the case of the breast, probably the most accessible and operable of the important sites. Even the trifling rate for males has increased by 27 per cent. since 1901–10, and that of females by 24. Probably the changes in mortality from cancer of the female sex organs are much affected by the fall in the birth-rate. In the Review for 1923 it was shown that during 1911–20 the standardized rates of the married and widowed from these cancers compared as follows with those of the single, taken as 100 in each case—ovary 53, breast 69, uterus 184. Along with the fall in the birth-rate cancer mortality has risen for the two sites, ovary and breast, associated with higher mortality where the organ is not normally used, and fallen for the third, the uterus, for which this association is reversed.

Skin.—Increase is comparatively slight for either sex. For each, however, the rodent ulcer rate recorded for 1928 was higher than any earlier rate shown, notwithstanding improvements in treatment. This may be to some extent a consequence of increasing precision of statement in certification. Scrotal cancer continues to increase, as must be expected until preventive measures recently taken have had time to produce an effect.

Lung.—No other site except the prostate returns so great an increase as that of 214 per cent. for the lung in males since 1901–10. Doubtless this is largely due to the increased attention recently called to this easily overlooked condition.

Prostate.—This rate shows the greatest increase of all, amounting to no less than 356 per cent. since 1901–10. This increase may, to some extent, be due to transfer from "prostatic hypertrophy" but it should be noted that the deaths from the latter condition have also substantially increased since 1911.

Mediastinum.—The sex contrast here is extreme, the rate for males being $2\frac{1}{2}$ times that for females, notwithstanding liability of the latter to involvement of the mediastinum by extension from the breast. But such a death would normally, of course, be referred to the breast as the primary seat of the disease. Lung cancer also is about three times as fatal to males as females, possibly to some extent as a consequence of occupational conditions, and may have more effect than the breast upon the mediastinum deaths.

50. **Tumours not returned as malignant.**—This title at present includes all non-malignant tumours except those of the brain, eye, and female genital organs. It also includes growths of unstated nature, which cannot on the evidence given be classed either as benign or malignant. In order to secure a comprehensive presentation of all deaths attributed to tumours, all of these not returned as due to cancer are assembled in Table LV, including mortality

Table LV.—England and Wales, 1928: Deaths attributed to Tumours not returned as Malignant.

Part affected.	All Ages.		0–		15–		35–		45–		55–		65–		75–	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Tumours classed with other disease of organ affected.																
84.2. Cerebral tumour	642	588	94	60	124	121	98	101	144	138	122	115	50	38	10	15
Cyst	12	17	4	2	4	8	1	2	1	3	2	1	—	1	—	—
Fibroma	2	4	—	—	—	—	—	1	1	2	1	1	—	—	—	—
Neurofibroma	2	3	—	—	1	—	1	—	—	3	—	—	—	—	—	—
Psammoma	4	—	1	—	1	—	—	—	1	—	1	—	—	—	—	—
Glioma	181	131	24	20	36	26	37	24	50	33	24	20	7	6	3	2
Other benign	7	6	2	1	—	1	2	1	1	—	1	1	1	2	—	—
Nature unstated	434	427	63	37	82	86	57	73	90	97	93	92	42	29	7	13
In 85, Eye	2	3	1	3	1	—	—	—	—	—	—	—	—	—	—	—
Glioma	1	3	1	3	—	—	—	—	—	—	—	—	—	—	—	—
Dermoid cyst	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
In 135. Prostate	229	—	—	—	—	—	—	—	3	—	42	—	91	—	93	—
Adenoma	215	—	—	—	—	—	—	—	3	—	38	—	86	—	88	—
Fibroadenoma	3	—	—	—	—	—	—	—	—	—	—	—	2	—	1	—
Fibroid	3	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—
Fibroma	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Myoadenoma	6	—	—	—	—	—	—	—	—	—	3	—	—	—	3	—
Fibromyoma	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
137. Ovarian tumour	—	290	—	1	—	30	—	44	—	49	—	55	—	60	—	51
Cyst	—	257	—	1	—	29	—	41	—	42	—	50	—	49	—	45
Cyst adenoma	—	6	—	—	—	1	—	1	—	1	—	—	—	1	—	2
Fibroma	—	3	—	—	—	—	—	—	—	1	—	1	—	1	—	—
Other benign	—	7	—	—	—	—	—	1	—	3	—	—	—	2	—	1
Nature unstated	—	17	—	—	—	—	—	1	—	2	—	4	—	7	—	3
139. Uterine tumour	—	424	—	—	—	30	—	134	—	155	—	28	—	39	—	38
Fibroid, Fibromyoma, Myoma	—	404	—	—	—	27	—	130	—	148	—	25	—	37	—	37
Polypus	—	10	—	—	—	1	—	3	—	5	—	—	—	—	—	1
Other benign	—	3	—	—	—	1	—	—	—	1	—	—	—	1	—	—
Nature unstated	—	7	—	—	—	1	—	1	—	1	—	3	—	1	—	—
In 141.2. Other female genital organs	—	3	—	—	—	1	—	1	—	1	—	—	—	—	—	—
Broad ligament, cyst	—	3	—	—	—	1	—	1	—	1	—	—	—	—	—	—
0. *Tumours not classed with other disease of organ or part affected.*																
Pituitary gland .. Cyst	5	—	1	—	3	—	1	—	—	—	—	—	—	—	—	—
Adenoma	4	2	—	—	1	—	3	1	—	—	—	—	—	1	—	—
Glioma	2	1	—	—	1	—	—	—	—	—	1	1	—	—	—	—
Nature unstated	5	13	—	3	1	3	2	5	2	1	—	1	—	—	—	—
Thyroid .. Adenoma	9	80	—	—	2	5	1	11	—	20	4	18	2	15	—	11
Cyst	—	3	—	—	—	1	—	—	—	—	—	1	—	1	—	—
Other benign	—	2	—	—	—	—	—	—	—	—	—	—	—	1	—	1
Nature unstated	1	4	1	—	—	—	—	—	—	—	—	1	—	—	—	3
Spinal cord .. Glioma	2	1	—	—	1	1	—	—	—	—	—	—	1	—	—	—
Other benign	2	5	—	—	1	1	1	1	—	1	—	1	—	1	—	—
Nature unstated	10	6	—	—	—	—	1	1	4	—	4	4	1	1	—	—
Ear .. Cholesteatoma	2	1	—	1	1	—	—	—	1	—	—	—	—	—	—	—
Other benign	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Nose .. Polypus	8	4	—	—	—	2	1	—	2	—	2	1	1	—	2	1
Larynx .. Papilloma	5	4	3	2	1	—	—	1	—	1	—	—	1	—	—	—
Other benign	3	—	—	—	—	—	—	—	1	—	2	—	—	—	—	—
Nature unstated	2	1	—	—	—	—	—	—	—	—	1	—	1	—	—	1
Mediastinum .. Non-malignant	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Nature unstated	79	33	2	1	5	2	10	2	11	7	22	13	27	5	2	3
Lung .. Nature unstated	26	23	—	—	1	2	3	3	6	5	7	5	6	6	3	2
Parotid .. Non-malignant	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Nature unstated	1	2	—	—	—	—	—	—	—	—	—	—	—	2	1	—
Pharynx .. Non-malignant	1	1	—	—	—	—	1	—	—	1	—	—	—	—	—	—
Nature unstated	1	1	—	—	—	—	—	1	—	—	1	—	—	—	—	—

Table LV.—England and Wales, 1928 : Deaths attributed to Tumours not returned as Malignant—*continued.*

Part affected.	All Ages.		0–		15–		35–		45–		55–		65–		75–	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
50. *Tumours not classed with other disease of organ or part affected*—contd.																
Œsophagus .. Nature unstated	4	3	—	—	—	—	—	—	—	1	1	—	1	2	2	—
Intestine .. Polypus	5	2	1	—	1	1	1	—	1	—	—	—	—	1	1	—
Other benign ..	4	4	1	—	—	—	—	1	2	1	—	—	1	1	—	1
Nature unstated	14	34	—	1	—	1	1	—	2	4	—	4	3	13	8	11
Liver .. .. Cyst	2	1	1	—	—	—	—	—	1	—	—	—	—	—	—	1
Other benign ..	1	1	—	—	—	—	1	—	—	—	—	—	—	1	—	—
Nature unstated	5	5	—	—	—	—	—	1	—	1	2	1	1	1	2	1
Pancreas .. Cyst	6	2	1	—	—	—	1	2	2	—	2	—	—	—	—	—
Nature unstated	2	3	—	—	—	—	—	—	—	1	1	—	1	1	—	1
Kidney .. .. Papilloma ..	2	1	—	—	—	—	—	—	—	—	2	—	—	1	—	—
Other benign ..	2	2	—	1	—	—	—	—	—	1	—	—	2	—	—	—
Nature unstated	9	5	—	—	—	—	—	1	3	1	2	—	3	2	1	1
Bladder .. .. Papilloma ..	129	39	1	—	3	1	4	—	10	2	33	6	38	10	40	20
Other benign ..	2	1	—	—	—	—	—	—	—	—	—	—	2	—	—	1
Nature unstated	4	1	—	—	—	—	1	—	—	—	—	—	1	—	2	1
Prostate .. .. Non-malignant ..	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Nature unstated	4	—	—	—	—	—	—	—	—	—	1	—	1	—	2	—
Breast .. .. Non-malignant ..	—	7	—	—	—	—	—	—	—	2	—	—	—	1	—	4
Spine .. .. Non-malignant ..	3	1	—	—	—	1	1	—	—	—	2	—	—	—	—	—
Nature unstated	9	7	—	1	1	—	3	1	3	3	1	1	1	1	—	—
Neck .. .. Lipoma.. ..	2	1	—	—	—	—	—	—	—	—	1	1	—	—	1	—
Other benign ..	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Thorax .. .. Nature unstated	10	7	—	—	—	1	—	—	1	3	7	1	1	1	1	1
Abdomen .. Non-malignant ..	1	1	—	—	—	—	—	—	1	—	—	—	—	1	—	—
Nature unstated	5	30	1	—	—	—	—	1	—	2	1	3	1	7	2	17
Other sites .. Non-malignant ..	28	18	2	3	2	3	2	—	6	2	4	4	5	3	7	3
Nature unstated	9	20	1	3	—	—	—	—	4	1	2	6	2	3	—	7
Site not stated .. Non-malignant ..	2	2	—	—	—	—	—	—	—	—	2	1	—	—	—	1
Total (50)	436	386	16	16	26	26	39	33	64	61	108	74	105	83	78	93
Total, all tumours . ..	1309	1694	111	80	151	208	137	313	211	404	272	272	246	220	181	197
,, benign tumours ..	675	1045	43	34	61	112	59	222	85	274	126	133	153	138	148	132
,, nature unstated ..	634	649	68	46	90	96	78	91	126	130	146	139	93	82	33	65

of this nature affecting the brain, eye, and female genital organs, but it is to be understood that, in accordance with international practice, the latter is excluded from the numbers shown under this head in Tables 4, 17, and 18.

As in other recent years adenoma of the prostate is classed to 135, Diseases of the Prostate, and not to 50, because the deaths so returned seem to be of the nature of prostatic hypertrophy.

Amongst the sites distinguished in Table LV the following are associated with a rapidly increasing number of deaths—the bladder, thyroid and pituitary glands, lung and mediastinum, and intestine. Deaths ascribed to papilloma of the bladder have increased for males from 44 in 1911 to 129, the largest number

yet recorded, in 1928, and for females from 19 to 39. Tumours of the thyroid have increased from 11 (8 benign and 3 unstated) in 1911, to 99 (89 adenoma and 5 other benign) in 1928. This is by far the largest number during the 18 years, 1927, with 65, coming next. The increase, like that from adenoma of the prostate, may be more apparent than real. Deaths from pituitary tumour were first distinguished in 1913, when they numbered 7 (2 benign and 5 of unstated nature). In 1928 they number 32, including 18 of unstated nature.

Deaths from tumour of the lung, all of unstated nature, numbered 49. During 1912–22 their number varied from 11 to 24, but in 1924 it rose to 48, and has been higher in each year since, reaching 64 in 1927. During the same period deaths from cancer of the lung (and pleura) have increased from an average of 433 yearly during 1911–20 to 1128 in 1928. The two increases are so similar in time and extent as to suggest that they have a common origin in the increased attention drawn of late years to lung cancer.

There has been rapid increase also of deaths ascribed to tumour of the mediastinum, again almost exclusively of unstated nature, but less than for the lung, and with diminished excess for males. The number has grown from 63 in 1913, when they were first distinguished, to 134 in 1925, and 113 in 1928.

Deaths from intestinal tumours not returned as malignant (chiefly of unstated nature) have increased from 30 in 1912 to 68 in 1926 and 63 in 1928. As cancer of the intestine has been noted as increasing rapidly during the same peried, it seems likely that a number of the tumours of unstated nature may also be in reality malignant. Their sex distribution (female excess as in Table LII) is consistent with this.

In contrast with the rapid increases described above, mortality from non-malignant tumours of the female genital organs remains very constant. During 1911-28 the standardized rate for uterine tumour has varied only between 13 and 16 per million, and that from ovarian between 10 and 15.

57. **Diabetes.**—The deaths allocated to this disease numbered 5,180, 2,198 of males and 2,982 of females, corresponding to standardized death-rates of 91 for males and 101 for females. This rate has been in excess for females in each year from 1923 onwards, whereas before that date excess for males was an invariable rule, though its amount had long been decreasing.

The rate for each sex is higher than in 1927, that for males having increased from 88 to 91 per million and that for females from 101·1 to 101·3. The rate for males is the highest since 1922 (101) and that for females since 1915 (104).

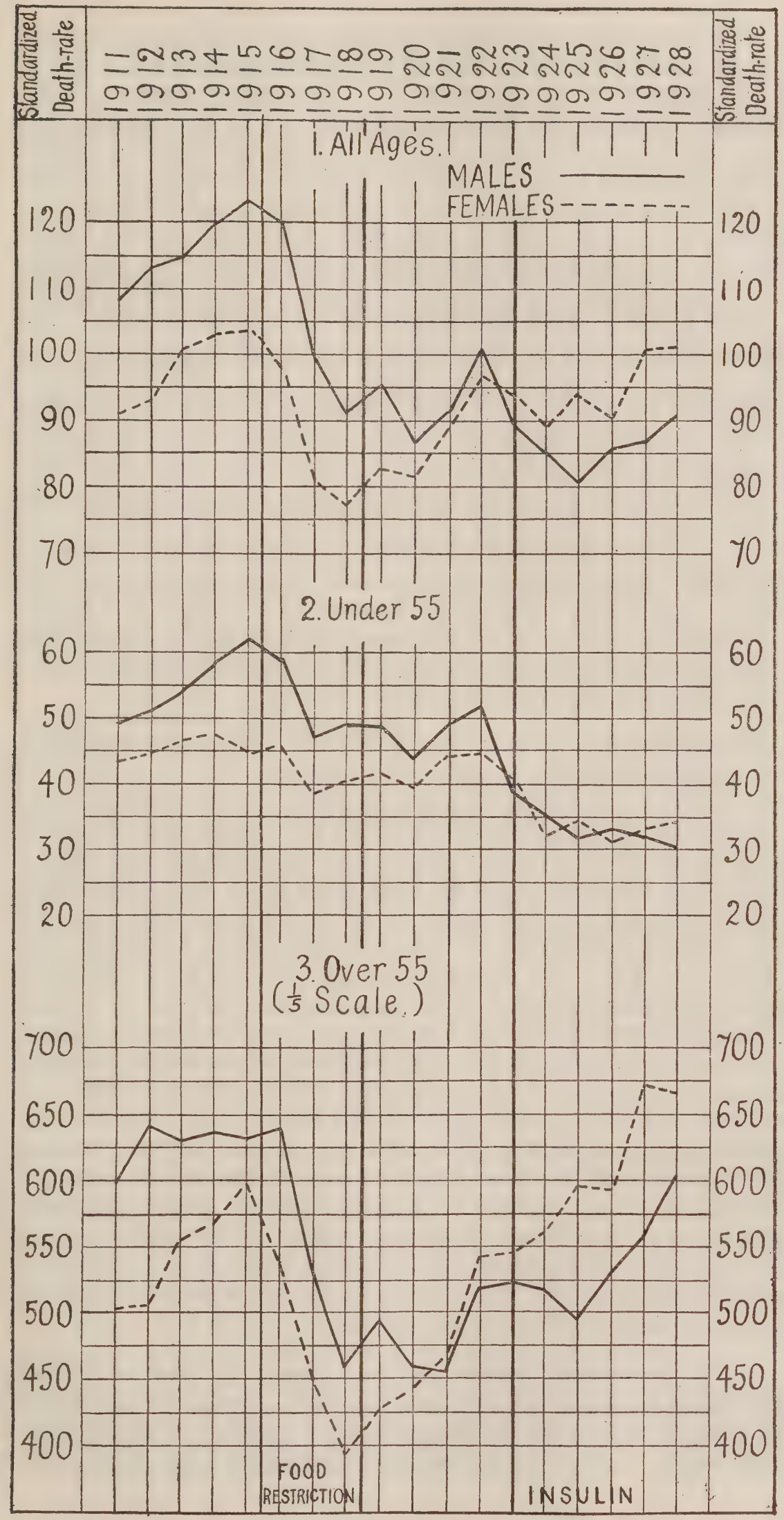
This increase has occurred entirely at the higher ages, as shown by the following comparison of death-rates at various ages in subsequent years with those for 1920–22 (before the introduction of insulin in 1923).

Table LVI.—England and Wales: Mortality from Diabetes in 1920–22 and in subsequent years.

	Standardized Rates.			0–	15–	25–	35–	45–	55–	65–	75–
	All ages	0–55	55–								
Death-Rates per Million Living.											
Males:—											
1920–22 ..	93·7	47·9	477·5	14	42	60	69	133	309	661	772
1923 ..	89·7	38·0	523·6	11	33	48	60	99	322	744	876
1924 ..	86·0	34·5	517·8	9	29	38	52	110	322	696	944
1925 ..	81·4	32·0	496·2	11	22	43	43	93	286	698	928
1926 ..	86·1	32·8	533·8	13	28	36	48	90	325	741	950
1927 ..	87·8	32·2	554·4	11	31	41	40	84	330	767	1,026
1928 ..	91·1	30·2	602·5	13	25	33	38	91	331	897	1,080
Females:—											
1920–22 ..	90·1	43·1	483·9	16	35	48	62	124	355	656	632
1923 ..	94·1	40·9	540·3	11	30	44	59	142	389	735	733
1924 ..	88·5	32·2	561·2	11	28	32	47	99	390	774	797
1925 ..	93·8	34·6	591·3	11	30	32	53	111	394	858	811
1926 ..	90·6	31·7	585·6	9	25	35	51	99	400	831	806
1927 ..	101·1	32·8	674·7	11	25	32	45	113	465	883	1,092
1928 ..	101·3	34·0	666·9	11	26	33	41	127	419	966	1,028
Mortality of Later Years per cent. of that in 1920–22.											
Males:—											
1923 ..	96	79	110	79	79	80	87	74	104	113	114
1924 ..	92	72	108	64	69	63	75	83	104	105	122
1925 ..	87	67	104	79	52	72	62	70	93	106	120
1926 ..	92	68	112	93	67	60	70	68	105	112	124
1927 ..	94	67	116	79	74	68	58	63	107	116	133
1928 ..	97	63	126	93	60	55	55	68	107	136	140
Females:—											
1923 ..	104	95	112	69	86	92	95	115	110	112	116
1924 ..	98	75	116	69	80	67	76	80	110	118	126
1925 ..	104	80	122	69	86	67	85	90	111	131	128
1926 ..	101	74	121	56	71	73	82	80	113	127	128
1927 ..	112	76	139	69	71	67	73	91	131	135	173
1928 ..	112	79	138	69	74	69	66	102	118	147	163

Since the introduction of insulin in 1923 the mortality of males under 55 years of age has been reduced by 37 per cent. and of females by 21. At 25–45 the rate for males has fallen by 45 per cent. But the effect of this large reduction, which is undoubtedly due to insulin, since it corresponds in time with its use, occurring suddenly on the introduction of the new remedy (Diagram V) is masked in the total death-rate by concurrent increase of mortality at ages over 55, which for males almost neutralizes, and for females outweighs, the reduction in earlier life. This increase evidently has a dietetic origin, since the mortality of these higher ages was greatly reduced during the period of food restriction during the war, and has been rising since this came to an end in 1918 (Diagram V). The death returns give no indication that insulin has had any effect in reducing the mortality of later life. Its effect has been much greater for males than for females, and in both sexes is greatest for young adults (25–45).

Diagram V.—England and Wales—Diabetes : Standardized Mortality per Million, 1911–1928.



The history of (standardized) diabetes mortality during the last 18 years, with distinction of sex and of ages under and over 55, is represented in Diagram V. The upper section of this Diagram, relating to total mortality, shows the outstanding event of the period to have been the sudden and heavy reduction during the latter part of the war, which has already been referred to as due, presumably, to food restriction. Allowing for the difference in scale, this is seen from the third section of the Diagram to have applied chiefly to later life (over 55) for which the standardized males rate fell by 29 per cent., from 638 per million in 1916 to 455 in 1918, and that for females by 36 per cent., from 599 in 1915 to 384 in 1918. But at the earlier ages also there was a very noticeable fall during the war, but reaching its maximum for each sex in 1917, whereas the later life reduction made further progress in 1918. Possibly food restriction prolonged somewhat the lives of certain young and middle-aged diabetics, but could not do so indefinitely, and continued during 1918 to prevent diabetes in elderly persons. After food restriction ceased in 1919 the total mortality gradually rose for each sex till 1922, when a sudden fall occurred in the next two or three years, with some subsequent further rise. This fall applied especially to males, with the result that whereas before 1923 their mortality had uniformly exceeded that of females it has since been consistently below it.

There can be no doubt that the fall in 1923 and subsequently has been due to the introduction of treatment by insulin. It first appears in 1923, the year in which the new remedy was introduced. It has been restricted to youth and middle age, the death-rates at the higher ages rising persistently and greatly since 1918, whereas under 55 they have fallen since 1920–22 by 30–35 per cent. for males and by 20–25 for females (Table LVI). The ground was gained in the first two years, 1923 and 1924, of the use of the new remedy, and has been steadily maintained since, the gain applying much more to males than to females. It might seem, therefore, that insulin had been more effective with males, were it not that the mortality of later life (over 55), apparently unaffected by insulin, has increased more for females, so that over 55, as at all ages jointly, the rate for females is now consistently the higher. If insulin has, as the Diagram suggests, had no effect on this later life mortality, it cannot well be responsible for the new feature of female excess at these ages, which indeed appeared before its introduction, so it remains possible that the cause, other than insulin, responsible for reversal of the sex ratio in later life, has caused it, though somewhat later and less definitely, at the earlier ages also.

The disquieting feature in the present position of diabetes mortality is its rapid increase in later life, presumably as a result of change in dietetic habits, associated possibly with increase of real wages. The occupational mortality returns for 1921–23 show

that whereas at ages under 45 diabetes mortality varies little with social class it is in later life very definitely more fatal to the well-to-do, the rate at ages over 65 being about five times as high for the highest as for the lowest social group distinguished. As wages advance the dietetic vices of the rich must naturally tend to be more shared by the poor, and the increase of elderly diabetes mortality, which has entirely swamped the great reduction effected by insulin at earlier ages, appears to represent a penalty of increased individual, if not national, prosperity. A similar increase from similar causes has excited much interest in the United States, and generally throughout the world it may be noted that as phthisis mortality decreases that from diabetes increases, the latter being a disease of prosperity as the former of adversity. But from every point of view considered, social distribution, association with food supplies, and reaction to specific treatment, the diabetes of earlier and of later life must be separately studied, as constituting statistically two very different diseases.

As a result of the changes described diabetes is rapidly becoming much more a disease of old people than it was before the war. The proportion of deaths at 65–75, 326 per 1,000 for males and 316 for females, was higher for each sex in 1928 than in any of the preceding 17 years, as at 75– also for males, while at each decennial age-period 15–45 the 1928 proportion was the lowest of the 18 years for males and at 15–25 and 35–45 also for females. Deaths under 55, which so recently as 1921 formed 475 per 1,000 of the whole for males, and 443 for females, were in 1928 only 296 and 299 per 1,000 respectively. In order to discount the effect of the increasing age of the population these proportions have been standardized by reference of the death-rates to the standard million. Reckoned on the actual deaths in Table 17 the transference of mortality from youth to age is of course even greater.

58(a). **Pernicious Anæmia.**—The record of 1928, the first complete year of knowledge of the new liver treatment for this disease, which was introduced in this country in the latter part of 1927, furnishes gratifying evidence of its efficacy. Since this form of mortality was first distinguished in 1920 the crude death-rate had varied up to 1927 between 59 and 71 per million. It fell to 47 in 1928. The standardized rate for males fell from 44–50 in 1921–27 to 30 in 1928 ; and that for females, consistently higher, from 54–61 to 39. For both sexes standardization considerably reduces the crude rate (39 for males and 54 for females in 1928). The disease is fatal chiefly in later life, old age excepted, and affects childhood little. Consequently the crude rate has been increased by the growing proportion of elderly persons in the population. Deaths are in higher proportion from pernicious anæmia than from all causes jointly at 45–75 in each sex, and especially at 55–65, when the excess is 110 per cent. for females and 72 for males.

Table LVII.—England and Wales, 1928 : Deaths from or connected with Alcoholism.

	All Ages.		Under 25.		25–		35–		45–		55–		65–		75–	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
66. Deaths attributed solely to alcoholism	74	34	—	—	6	2	17	4	24	9	15	10	10	6	2	3
Deaths attributed to other causes in conjunction with alcoholism —																
11. Influenza	7	4	—	—	1	—	3	—	—	2	1	—	2	2	—	—
21. Erysipelas	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
31. Tuberculosis of the respiratory system	13	4	—	—	—	—	9	2	2	1	2	—	—	1	—	—
37. Disseminated tuberculosis	1	2	—	—	—	—	1	—	—	2	—	—	—	—	—	—
38. Syphilis	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
43–49 Cancer	14	2	—	—	—	—	—	—	1	—	8	1	5	1	—	—
51. Rheumatic fever	2	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—
52 (1) Chronic rheumatism	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
52 (2) Acute rheumatoid arthritis	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—
57. Diabetes	4	2	—	—	—	—	—	—	—	—	2	—	—	2	2	—
68. Chronic poisoning by organic substances	2	1	—	—	1	—	—	—	—	1	1	—	—	—	—	—
69 (3) Diabetes insipidus	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
70 (2) Encephalitis alcoholica	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
71 Meningitis	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
74. Cerebral hæmorrhage, apoplexy, etc.	10	10	—	—	—	1	1	—	1	4	3	2	4	3	1	—
75 (*a*) Hemiplegia	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
76. General paralysis of the insane	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
77. Korsakoff's syndrome	—	6	—	—	—	1	—	1	—	1	—	1	—	1	—	1
78. Epilepsy	3	1	—	—	—	—	1	—	1	1	1	—	—	—	—	—
82. Neuritis	10	17	—	—	—	—	1	2	2	6	6	4	1	4	—	1
83. Cerebral softening	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
84 (3) Disseminated sclerosis	2	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—
85. Cataract	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
88 (3) Acute myocarditis	1	1	—	—	—	—	1	1	—	—	—	—	—	—	—	—
89. Angina pectoris	2	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—
90 (1–4) Valvular disease of heart	7	7	—	—	—	—	—	—	2	3	2	2	3	1	—	1
90. (5) Fatty heart	7	9	—	—	1	1	1	1	2	3	2	3	1	1	—	—
90 (6) Cardiac dilatation	2	1	—	—	—	—	1	—	1	—	—	1	—	—	—	—
90 (7) Other or unspecified myocardial disease	32	12	—	—	—	—	3	—	3	5	17	3	7	4	2	—
90 (8) Disordered action of heart	1	1	—	—	—	—	1	—	—	—	—	—	—	1	—	—
90 (9) Undefined heart disease	2	3	—	—	—	—	—	—	—	—	2	1	—	2	—	—
91 (*a*) Aneurysm of aorta	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
91 (*b*) Arterio-sclerosis	15	3	—	—	—	—	2	—	2	—	6	1	4	2	1	—
91 (*c*) Arteritis	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
93. Gastric varix	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
99. Bronchitis	8	7	—	—	—	—	—	—	2	—	3	4	2	2	1	1
100. Broncho-pneumonia	12	3	—	—	—	—	3	—	4	1	3	1	1	1	1	—
101 (*a*) Lobar-pneumonia	34	9	—	—	1	—	8	2	15	1	5	5	4	—	1	1
102. Pleurisy	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
103. Hypostatic pneumonia	1	1	—	—	1	—	—	1	—	—	—	—	—	—	—	—
105. Asthma	2	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—
108 (1) Pyorrhœa	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
109 (1) Tonsillar abscess	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—
109 (2) Pharyngitis	2	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—
111. Ulcer of the stomach and duodenum	5	—	—	—	—	—	1	—	3	—	1	—	—	—	—	—
112 (1) Inflammation of the stomach	9	6	—	—	—	—	—	—	2	1	4	4	2	—	1	1
112 (2) Gastrectasis	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
113–114 (3) Diarrhœa	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
117. Appendicitis	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
118 (*a*) Hernia	2	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—
118 (*b*) Paralytic ileus	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
119. Constipation	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
122 (*a*) Cirrhosis of the liver	210	110	—	—	5	—	16	11	55	29	83	31	43	31	8	8
128–129 Nephritis	25	16	—	—	—	—	3	2	9	2	9	7	2	4	2	1
135. Enlarged prostate	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
151. Gangrene	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
152. Carbuncle	2	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—
154 (1) Ulcer of leg	1	1	—	—	—	—	—	—	—	—	1	—	—	1	—	—
154 (2) Eczema	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
155 (1) Periostitis of mandible	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
165–174. Suicide	10	—	—	—	1	—	3	—	4	—	2	—	—	—	—	—
185. Injury by fall	13	4	—	—	—	—	5	—	3	2	4	1	1	—	—	1
188. Injury by crushing (vehicles, railway, etc.)	1	2	—	—	—	—	—	1	1	1	—	—	—	—	—	—
Other violence	6	4	—	—	3	—	2	—	—	2	—	2	1	—	—	—
Total	573	290	—	—	22	5	88	29	151	81	190	84	97	72	25	19

66. **Alcoholism.**—This heading in the International List of causes of death excludes organic disease attributed to alcoholism, so, in order to obtain as complete information as possible with regard to mortality from over-indulgence in alcohol, all the deaths in certification of which any mention of alcohol appears are assembled in Table LVII. These deaths make up a total of 863, as against 108 classed to heading 66 as directly due to alcohol.

The former number is the largest since 1916 (1,200), but as the latter is the smallest since 1918 (81) the increase applies rather to statement of the alcoholic origin of disease than to record of alcoholism. For this increase the new form of certificate of cause of death, introduced in 1927, supplies a ready explanation. As noted under syphilis, the change of form (as well as the method of delivery to the registrar) appears to have had a definite effect in promoting record of causes of death largely suppressed in past certification. The extent to which this suppression still continues is of course not indicated. It can only be said that it is apparently less than before. Since 1926, the last complete year of the currency of the old certificate, deaths attributed directly to alcoholism have slightly decreased (115 to 108) but others noted as causally associated with alcoholism have increased from 384 to 755, or by 97 per cent.

All the chief diseases represented in Table LVII share this increase since 1926 except fatty heart, to which 20 deaths were classed in 1926 as against 16 in Table LVII. Most of the increases are large, ranging up to 367 per cent. for valvular disease. For cirrhosis of the liver, much the most important numerically of these causes, the increase is 142 per cent. This increase is not shared by suicide (10 deaths, as in 1926) or other forms of violence, which have decreased by 30 per cent. The conditions of certification in an inquest verdict are very different from those applying to private practice, so the decrease for violence may be coupled with that for alcoholism so returned, which is also largely furnished by inquest inquiry, as showing that where the facts have not been suppressed in the past the records have not been affected by the change of certificate, to which the increase recorded under other headings may therefore be with the more confidence ascribed.

74. **Cerebral Hæmorrhage, Apoplexy, etc.**—The number of deaths under this heading has been falling of late years, and at 10,194 for males and 13,560 for females, was smaller in 1928 than in any of the ten preceding years (Table 4). This change is due to the fact that many deaths which would formerly have been assigned to cerebral hæmorrhage are now ascribed to the arteriosclerosis of the cerebral vessels which is responsible for the hæmorrhage. Were it not for this the crude death-rates, which are seen from Table 5 to be falling for each sex, would tend to rise on account of the ageing of the population, old age being especially affected by this cause of death.

To overcome this difficulty the deaths now transferred to arterio-sclerosis have, from 1921 onwards, been distinguished (91*b*:1), and are seen from Table 4 to have increased from 3,996 in that year to 10,689 in 1928. As the transfer causes a spurious appearance of reduction in mortality from cerebral hæmorrhage, the rates for 74 and 91*b*:1 will be considered jointly as now more fairly representing the cerebral hæmorrhage of earlier years than those for 74 alone.

Since 1921 the joint crude rate has increased for males from 745 in that year to 829 in 1928, and for females from 817 to 912. But there is no evidence that the mortality is increasing. If it had remained quite unchanged during the eight years the increasing age of the population would account for just about this increase of the crude death-rate. For when the rates are standardized to eliminate this effect of increasing age they are found to have remained practically stationary, 633 and 585 per million for males and females in 1928, comparing with 640 and 592 in 1921.

Prior to 1921 the standardized rates for 74 alone were falling somewhat (550 for males and 538 for females in 1920, comparing with 624 and 619 in 1911), although the crude rates remained practically unchanged during these ten years. The stability of the crude rate must have represented a balance of decrease by transfer to arterio-sclerosis against increase due to ageing.

On the whole then, the evidence available, when proper allowance is made, so far as now possible, for changing conditions, suggests that the total mortality from cerebral hæmorrhage has changed very little, certainly from 1921, and probably from 1911.

But the position is very different with regard to the rates returned at different ages. When these are distinguished it proves that a marked transfer of these deaths has occurred from the earlier to the later age groups. This appears from the following comparison of the age distribution of the deaths in 1911, 1921 and 1928, in which, to eliminate the effect of increasing population age, the proportions shown are those of deaths in the standard population of 1901. But for this correction the change shown would be considerably greater than it is.

Standardized Age-Distribution of Mortality from Cerebral Hæmorrhage, 1911, 1921 *and* 1928.

	Males.			*Females.*		
	1911.	1921.	1928.	1911.	1921.	1928.
0– ..	6	4	1	6	3	1
15– ..	4	4	2	6	3	2
25– ..	12	10	5	12	7	4
35– ..	36	24	19	41	28	20
45– ..	106	82	67	133	99	85
55– ..	221	196	177	224	205	186
65– ..	333	340	362	315	324	345
75– ..	282	340	367	263	331	357
Total ..	1,000	1,000	1,000	1,000	1,000	1,000

At all ages under 65 the earlier proportions have now decreased for each sex, the deficit being made up by important increases at 65–75 and 75–, when over 70 per cent. of the deaths now occur.

It is true that the comparability of 1928, when arterio-sclerosis with record of cerebral vascular lesion (91*b* : 1) is included in the figures, with 1911, when it cannot be, not having then been distinguished, is not formally complete. But there is reason to believe that mention of antecedent arterio-sclerosis, which has since become so common in these cases, was rare in 1911, so the change in age can be little affected by this consideration. This conclusion is supported by the progressive nature of the change, the distribution for each sex in 1921 being intermediate between those of 1911 and 1928.

The same point is brought out by comparison of the death-rates at various ages throughout the 18 years. At all ages under 65, recorded mortality has fallen for each sex, while at 65–75 and 75– it has risen. As the changes have been consistently progressive throughout the period, except for a sudden increase of the rates at all the higher ages in 1921, when the deaths referred to arterio-sclerosis, previously omitted, were first taken into account, it may suffice to quote for each sex the death-rates in 1911 and in 1928, so showing the total change.

Mortality, per Million Living, from Cerebral Hæmorrhage, 1911 *and* 1928.

		All ages.									
		crude	standardized	0–	15–	25–	35–	45–	55–	65–	75–
Males	1911	626	624	12	12	44	183	744	2,311	6,275	12,942
	1928	829	633	2	7	21	98	472	1,874	6,934	17,120
Females	1911	730	619	12	20	45	205	923	2,320	5,899	12,000
	1928	912	585	2	5	15	93	558	1,817	6,102	15,367

All the death-rates for ages under 65 have fallen for each sex, to an extent decreasing regularly with increase of age, while those at 65– and 75– have risen, particularly the latter. These changes in rates of mortality of course harmonize with, and account for, that already noted in regard to distribution of deaths by age.

As a possible explanation of this remarkably orderly sequence of changes it may be suggested that the increase after 65 has occurred at the expense of " old age," a form of return much less favoured now than 18 years ago. The standard of diagnosis at the junior ages appears to have become more stringent, so it would appear that actual decrease of the standardized rate, which has, indeed, occurred to some slight extent for females, has been prevented only by increased precision of certification in old age, when most of the deaths occur.

If this is so, cerebral hæmorrhage provides a good illustration of the misleading nature, at the present time, of the crude death-rate as an index of mortality. For, although the crude rate has

increased largely for each sex, the only increase for either which survives analysis by age is readily explicable as a consequence of the increasing precision (at least in form) of certification in old age. Moreover, the crude rates are in excess for females at both dates, owing to their greater age, whereas the standardized rates and those for separate ages show that males are as usual somewhat the greater sufferers, especially in old age. In each of the 18 years dealt with the standardized rate for males has exceeded that for females.

The extent to which this form of mortality is restricted to later life is indicated in the following statement of deaths from cerebral hæmorrhage (74 and 91*b*:1) per cent. of all deaths at various ages in each sex.

	All ages.	0–	15–	25–	35–	45–	55–	65–	75–
Males ..	6·65	0·02	0·23	0·56	1·62	4·19	8·04	12·00	11·84
Females	8·35	0·03	0·19	0·47	2·03	6·86	10·64	13·78	12·32

Negligible as a risk in early life, cerebral hæmorrhage causes 10 per cent. or more of all deaths at each age over 55. The very definite excess of this proportion for females except at the ages of child-birth is in interesting contrast to their somewhat lower mortality. Cerebral hæmorrhage has much less competition to meet as a cause of female than of male mortality.

87–90. **Heart Disease.**—The number of deaths allocated to this cause, 77,028, 35,777 of males and 41,251 of females, was as usual larger than for any other item in the list of causes.

For each sex these numbers were considerably the highest allocated to this cause since the commencement of comparable records in 1901, and the crude death-rate per million (1,893 for males and 2,004 for females) was also the highest recorded for each sex during the present century. But Table LVIII shows that these rates are reduced on standardization to 1,474 for males and 1,349 for females, and that, though both these rates represent a considerable increase in 1928, being in each case the highest since 1915, they are little higher than those for the decennium 1901–10.

Table LVIII.—England and Wales—Mortality from Heart Disease (87–90) at different Periods, distinguishing Sex and Age.

		All Ages.		0–	15–	25–	35–	45–	55–	65–	75–
		Crude	Stand-. ardized.								
Males	1901–10	1,410	1,437*	127	261	392	903	2,208	5,778	11,941	17,189
	1911–20	1,442	1,348	110	265	387	751	1,793	4,810	11,570	20,252
	1926	1,606	1,298	79	175	269	535	1,439	4,015	11,809	27,357
	1927	1,774	1,412	70	177	266	608	1,518	4,370	12,759	30,847
	1928	1,893	1,474	83	182	258	612	1,616	4,476	13,366	32,572
Females	1901–10	1,459	1,337*	157	280	411	938	2,093	5,045	10,672	15,372
	1911–20	1,475	1,223	142	290	394	754	1,681	4,051	9,852	18,117
	1926	1,691	1,188	98	215	301	553	1,262	3,432	10,196	25,298
	1927	1,891	1,303	90	224	315	588	1,346	3,649	11,138	29,602
	1928	2,004	1,349	99	228	301	584	1,352	3,762	11,614	31,132

* Allowance for change in classification in 1911 reduces these rates to 1,408 for males and 1,321 for females.

In the Review for 1926 it was pointed out that the considerable increase, now occurring, of crude mortality from heart disease was mainly due to the increasing age of the population, and to some extent to a change in certification consisting in an increased tendency to record myocardial degeneration on the certificates of deaths from causes giving rise to it.

In 1928 the latter of these two factors has become overwhelmingly predominant. If the rates for chronic myocarditis in Table 5 are compared with those for heart disease as a whole it may be seen that for males practically the whole, and for females rather more than the whole, of the increase for 1928 over 1927 in the crude total rates is accounted for by this form of return.

Similarly Table LIX shows that the increase of the standardized rate for each sex in 1928, for males from 1,412 to 1,474, and for females from 1,303 to 1,349, falls entirely under this heading. If for males the myocarditis mortality had remained unchanged at 526 per million, total heart disease mortality would have fallen from 1,412 to 1,399; and if for females it had remained at 460 their total rate would have fallen from 1,303 to 1,284. Thus the semblance of increase in heart disease mortality as recorded in Table 5 is entirely fictitious, being due mainly to the increasing age of the population, as indicated by its practical disappearance on standardization (Table LVIII) and for the rest to a change in the certification of disease which makes much more frequent record of degenerative changes in the heart muscle than was customary even a few years ago.

As this increase in mortality ascribed to chronic myocardial disease has thus become of such importance as to dominate the situation and convert an actual decrease of all other forms of cardiac mortality into an increase of the total rates, its history, since the commencement in 1921 of its separate record in our returns, is set out in detail in Table LIX.

It will be seen that this form of return is increasing with surprising rapidity, especially at the higher ages. In the eight years since it was first distinguished in our tabulation the total mortality recorded has increased by 188 per cent. for males and 178 for females.

Other headings of Table LIX than 90 (7) also show how rapidly certification is changing at the present time. It is becoming more precise and specific in form. In the eight years covered by the table the mortality ascribed to undefined "valvular disease" and to undefined "heart disease" has fallen greatly for each sex, valvular disease from 273 to 217 in males and from 263 to 224 in females, and heart disease from 257 to 132 in males and from 248 to 120 in females. At the same time the rates for the various specified forms of valvular and of other heart disease have increased.

Table LIX.—England and Wales, 1921–28 : Standardized Death-rates per Million from Different Forms of Heart Disease.

	87	88 (1)	88 (2)	88 (3)	89	90 (1)	90 (2)	90 (3)	90 (4)	90 (5)	90 (6)	90 (7)	90 (8)	90 (9)	87–90
	Pericarditis.	Infective Endocarditis.	Other Acute Endocarditis.	Acute Myocarditis.	Angina Pectoris.	Aortic Disease.	Mitral Disease.	Aortic and Mitral Disease.	"Valvular" Disease.	Fatty Heart.	Cardiac Dilatation.	Other or unspecified Myocardial Disease.	Disordered Action of the Heart.	"Heart Disease."	Heart Diseases, allforms
Males.															
1921 ..	10	40	18	6	34	91	156	24	273	50	23	209	11	257	1,203
1922 ..	11	35	14	6	44	95	169	23	271	56	23	269	13	271	1,301
1923 ..	10	30	15	7	46	89	155	21	246	54	19	281	15	222	1,210
1924 ..	9	27	14	9	53	87	148	21	251	52	17	341	19	218	1,267
1925 ..	9	26	14	10	55	89	147	20	245	51	17	409	24	206	1,322
1926 ..	8	25	12	11	52	87	139	20	231	51	14	446	27	176	1,298
1927 ..	8	26	11	11	79	90	157	23	224	50	14	526	33	160	1,412
1928 ..	7	23	10	12	101	91	165	27	217	48	11	601	28	132	1,474
Females.															
1921 ..	8	24	18	5	13	32	212	15	263	50	19	189	11	248	1,107
1922 ..	8	24	16	6	17	34	229	15	283	57	21	245	13	250	1,218
1923 ..	6	23	14	7	18	35	211	16	248	56	16	254	17	208	1,129
1924 ..	7	24	14	8	19	32	211	14	260	53	12	300	23	203	1,181
1925 ..	7	22	16	10	19	36	206	16	240	54	14	361	29	189	1,220
1926 ..	5	25	15	11	20	33	193	12	229	47	13	388	33	164	1,188
1927 ..	5	24	14	10	27	34	222	18	236	54	11	460	41	148	1,303
1928 ..	5	23	12	10	35	35	232	24	224	54	8	525	40	120	1,349

The great increase for angina pectoris in each sex, especially since 1926, is for the most part artificial, being the consequence of a change of classification practice in 1927. Before that year deaths from sclerosis or thrombosis of the coronary arteries were classified with those from similar disease of other arteries, but by 1927 it had become apparent that increasing record of the condition of the coronary arteries in cases of death from angina pectoris was transferring much mortality from angina to arterial disease, and such deaths are now, accordingly, assigned to angina whether the condition of the coronary arteries is recorded or not. The case is very similar to that of cerebral haemorrhage and arterio-sclerosis (page 94).

There may also be noted in Table LIX a very substantial fall, for males only, in the rate for infective endocarditis. This rate increased suddenly for males, and to a smaller extent for females, immediately after the war, so its recent fall for males merely represents a return to normal level.

For both sexes the type of certificate classed to the heading "disordered action of the heart" (heart block, auricular fibrillation, &c., &c.) is increasing very rapidly. In 1911 85 deaths were so returned, and in 1928 their number has grown to 1961 (Table 4).

91 (*b*). **Arterio-sclerosis.**—There were 25,753 deaths allocated to this cause in 1928, 14,176 of males and 11,577 of females. For each sex this is the largest number of deaths hitherto so returned.

Since these deaths were first distinguished in 1911, indeed, there has been no year in which there were not more deaths so returned than in the year before. (Table 4).

The increase was least in 1916, when a slight fall for males occurred ; but the temporary return to active professional life of many retired practitioners provides a ready explanation of this and other similar simultaneous checks to the development of changing tendencies in medical terminology.

With this enormous expansion of the scope of the heading the mortality associated with it has naturally increased also at a similar rate—the crude death-rate for males from 136 per million in 1911 to 750 in 1928, and for females from 81 to 562, and the standardized from 132 to 581 for males, and from 62 to 353 for females. The increase has been greater in the crude than in the standardized rate (451 as against 340 per cent. for males, and 594 and 469 for females) because the deaths concerned are mainly those of old people, so that a portion of the crude increase, deducted in the standardized, represents merely the effect of the increased age of the population.

Of these deaths a rapidly increasing proportion (32 per cent. in 1921, when the distinction was first made, and 42 per cent. in 1928) are associated in certification with hæmorrhage or other vascular lesion of the brain (page 95). As there can be no doubt that a few years earlier such deaths would have been ascribed simply to cerebral haemorrhage it is evident that, as regards at least this large section of the total, increase in arterio-sclerosis mortality has resulted merely from the increasing elaboration of certification, and there is every reason to believe that this tendency dominates the general increase as well. In old age, for instance, arterio-sclerosis is rapidly gaining ground at the expense of " senile decay."

97–107. **Diseases of the Respiratory System.**—The total number of deaths allocated to these diseases was 59,491. This compares with 75,941 in 1927, and is much the lowest total in any year since the international classification was first used in 1911, and probably for many years before, the next lowest total since 1910 being 67,829 in 1926. The standardized death-rates, 1,649 per million for males and 1,151 for females, are also the lowest on recent record for either sex. The reduction applies to both sexes and all ages. The important section of this mortality contributed by children under 5 years of age (25 per cent. of the deaths in 1928) is lower at 5,193 per million for males and 4,179 for females than in any previous year since 1910 for either sex, and the same statement applies to the rates for males at all decennial age-groups over 45, and for females at all over 25. The only years returning lower rates at youthful ages than those of 1928 are as follows :—Males : 5–15, 1922, 1923, 1924, 1926 ; 15–25, 1926 ; 25–35, 1926 ; 35–45, 1926 ; Females : 5–15, 1924, 1926 ; 15–25, 1926.

Such a record evidently implies exceptionally favourable climatic conditions, and it becomes, therefore, of interest to ascertain from Table 18 the monthly distribution of these deaths. The figures in this table may be stated as follows for comparison with those published in the Review for 1925 for the quinquennium 1921–25, but as the deaths during October–December are not yet tabulated they have to be approximately estimated for these three months as a whole by deducting deaths occurring in January–September from the total registered during the year.

Diseases of the Respiratory System.
Deaths per Day.

	1928.	1921–25.	1928 per cent. of 1921–25.
January	278	335	83
February	219	359	61
March	248	332	75
April	199	274	73
May	158	194	81
June	119	135	88
July	84	108	78
August	79	93	85
September	85	105	81
October			
November	161	222	73
December			
Year	163	216	75

These figures show that the favourable conditions of 1928 applied throughout the whole year, the proportion of daily deaths to those in 1921–25 varying only from 61 per cent. in February to 88 in June, so that the reduction for the year of 25 per cent., as compared with the 1921–25 standard was very closely maintained throughout the whole twelve months.

Moreover, as the figures of deaths per day take no account of population increase they understate the actual decrease of mortality. The standardized death-rate in 1928 was, for males, 75 per cent., and for females, 70 per cent. of that in 1921–25, so the reduction of 25 per cent. in deaths per day would have to be correspondingly increased if actual mortality, and not its seasonal distribution, were being considered.

The sex reductions just quoted show that the improvement noted applies more to females than to males. The 1928 ratio of male to female standardized mortality from these causes, 1,432 : 1,000, is, in fact, the highest recorded during 1911–28. This fact appears to be related to the exceptionally favourable conditions of the year, as meteorological conditions appear to affect females more than males. That this has been so of late years may be seen from the following comparisons of standardized

sex mortality during 1922–28. During each of these seven years change of mortality was in the same direction, up or down, for each sex, and in each of them an increase of mortality was accompanied by a decrease of the male-female mortality ratio, and *vice-versa*.

Standardized Mortality (per Million) from Respiratory Diseases.

	(*a*) Males.	(*b*) Females.	Ratio (*a*) per 1,000 (*b*).
1921	2,176	1,609	1,353
1922	2,510	1,896	1,324
1923	1,973	1,451	1,360
1924	2,217	1,682	1,318
1925	2,108	1,572	1,341
1926	1,851	1,349	1,372
1927	2,060	1,513	1,361
1928	1,649	1,151	1,432

When unfavourable weather conditions have increased mortality, they have done so more for females than for males, and the male-female ratio has fallen accordingly. During 1911–21 this was not always the case, but conditions, especially of employment, were less normal during the war, and the rule of inverse movement applies in six out of the nine years during 1911–21 in which change of mortality was in the same direction for each sex. Adding these nine to the seven for which the facts have been quoted, we have a total of sixteen years with mortality change in the same direction for each sex, and in thirteen of these the male-female sex ratio moved in the opposite direction to mortality.

The reason for the greater relative susceptibility of females to the meteorological causes of respiratory disease seems to be that in their case these causes account for a larger proportion of the total deaths. Of two main factors in the respiratory mortality of males, weather agencies and adverse occupational conditions, the female, broadly speaking, shares the one and escapes the other. The excessive respiratory disease rates quoted for certain occupations in the Report on Occupational Mortality during 1921–23 must contribute largely to the total rates for males, representing a risk to which females, generally speaking, are not exposed. This may be inferred from comparison of the sex-ratio of mortality from respiratory and other causes. As occupational risks are above all respiratory in nature, exposure of the male to this class of risk should tell chiefly upon his respiratory organs. In view of this the following comparison of male and female mortality from respiratory and other causes during 1911–28 is not surprising.

As the rates compared are referred, by standardization, to a population basis identical for both sexes, they present a true picture of the comparative incidence of mortality upon them.

It is in later middle life that the mortality of males tends most to exceed that of females, the age of maximum excess during 1921–28 having been at 15–25 in one year (1918), at 25–35 in three years, at 35–45 in eleven, and at 45–55 in three years.

Sex Mortality Ratio 1911–28, *taking Rate for Females as* 1,000.

	All Causes.	Respiratory. Diseases.	Other Causes.
1911	1,202	1,306	1,184
1912	1,203	1,293	1,186
1913	1,221	1,318	1,202
1914	1,216	1,300	1,199
1915	1,240	1,312	1,224
1916	1,260	1,343	1,241
1917	1,282	1,423	1,253
1918	1,204	1,311	1,182
1919	1,232	1,308	1,216
1920	1,236	1,372	1,208
1921	1,223	1,353	1,199
1922	1,215	1,324	1,191
1923	1,229	1,360	1,205
1924	1,222	1,318	1,201
1925	1,227	1,341	1,205
1926	1,235	1,372	1,211
1927	1,236	1,361	1,213
1928	1,248	1,432	1,220

In each of these eighteen years the sex mortality ratio has been higher for respiratory diseases than for other causes, as a consequence, no doubt, of the special risk they represent for men following occupations involving exposure to siliceous dust, such as metal grinding and certain branches of mining. It follows that as so many deaths of males are of this origin their death-rate is less subject to climatic influences than that of females. Thus the exceptionally high proportion of male to female mortality in 1928 is a natural consequence of the favourable weather conditions of the year, which have affected females more than males.

As regards the different forms of disease distinguished, reduction of mortality for males in 1928 was greatest from bronchitis (26·8 per cent.); broncho-pneumonia (24·0) and undefined pneumonia (23·7) coming next. On the other hand there was an

increase of 3·7 for lobar pneumonia so returned, which tends to grow at the present time by transfer from pneumonia undefined. As a consequence of these movements the share of bronchitis in total respiratory mortality (males) was less in 1928, at 33·3 per cent., than in any previous year from 1911 onwards, and the share of lobar pneumonia, 19·7 per cent., was the highest during the same period, and that of "pneumonia" not otherwise defined (8·5 per cent.), the lowest. During these eighteen years the proportion assigned to bronchitis has varied from 333 to 451 per 1,000; that to broncho-pneumonia from 206 to 326; that to lobar pneumonia, from 95 to 197; and that to "pneumonia" so returned from 85 in 1928 to 178 in 1911 (204 in 1918). The practice of leaving the type of pneumonia responsible in each case unspecified is seen therefore to have decreased during 1911–28 from a maximum in the first of these years to a minimum in the last, if the exceptional conditions of the great influenza epidemic are excluded from consideration.

129. **Chronic Nephritis.**—The increase of mortality attributed to this cause, noted for 1927 as having followed steady reduction during the twelve previous years, has progressed further in 1928, the standardized rate for males rising from 271 to 284 per million, and for females from 213 to 230. These rates, however, remain for each sex well below the maximum attained in 1913–15 (392 for males and 287 for females). The crude rates (Table 5) are subject to considerable reduction on standardization, as this form of mortality chiefly affects the increasing proportion of elderly persons in our population.

143–150. **The Puerperal State.**—The number of deaths assigned to pregnancy or childbirth was 2,920 (Tables 4, 17 and LXII), corresponding to a rate of 4·42 per 1,000 (live) births. Inclusion of the 790 deaths in Table LXIV raises the proportion to 5·62 deaths stated to have been caused by, or associated with, pregnancy and childbirth for every 1,000 (live) births.

This ratio represents an increase of 3·5 per cent. over that for 1927, which would be greater but for the fact that deaths from influenza in Table LXIV fell from 124 in 1927 to 52. To this extent an accidental circumstance of the year's mortality tends to minimize the real rise in puerperal mortality, which Table LX shows to be from 4·11 deaths per 1,000 births in 1927 to 4·42 in 1928.

For comparison of the deaths definitely assigned to pregnancy and childbirth with those so classed for years prior to 1911 deduction is required of 178 deaths from puerperal nephritis and albuminuria (Table LXII), which before that date were not distinguished as puerperal. The resultant rate of 4·15 deaths per 1,000 live births is compared in Table LX with similar rates for the preceding thirty-seven years, before which the comparability of the figures is doubtful.

Table LX.—England and Wales. Mortality of Women in or associated with Childbirth per Thousand Children born alive, 1891–1928.

Year.	Classification in use from 1911 onwards.				Classification in use before 1911.				Total Maternal Mortality.
	Puerperal Sepsis.	Other Puerperal causes.	Total Puerperal Mortality.	*Non-puerperal causes.	Puerperal Sepsis.	Other Puerperal causes.	Total Puerperal Mortality.	†Non-puerperal causes.	
1891–95 ..	—	—	—	—	2·60	2·89	5·49	—	—
1896–1900 ..	—	—	—	—	2·12	2·57	4·69	—	—
1901–05 ..	—	—	—	—	1·95	2·32	4·27	1·29	5·56
1906–10 ..	—	—	—	—	1·56	2·18	3·74	1·26	5·00
1911–15 ..	1·42	2·61	4·03	0·99	1·50	2·31	3·81	1·21	5·02
1916–20 ..	1·51	2·61	4·12	1·68	1·59	2·29	3·88	1·92	5·80
1921–25 ..	1·40	2·50	3·90	1·14	1·48	2·21	3·69	1·35	5·04
1911	1·43	2·44	3·87	1·04	1·52	2·15	3·67	1·24	4·91
1912	1·39	2·59	3·98	0·97	1·47	2·31	3·78	1·17	4·95
1913	1·26	2·70	3·96	0·91	1·34	2·37	3·71	1·16	4·87
1914	1·55	2·62	4·17	0·95	1·63	2·32	3·95	1·17	5·12
1915	1·47	2·71	4·18	1·09	1·56	2·38	3·94	1·33	5·27
1916	1·38	2·74	4·12	0·94	1·47	2·40	3·87	1·19	5·06
1917	1·31	2·58	3·89	0·95	1·39	2·27	3·66	1·18	4·84
1918	1·28	2·51	3·79	3·81	1·35	2·20	3·55	4·05	7·60
1919	1·67	2·70	4·37	1·93	1·76	2·36	4·12	2·18	6·30
1920	1·81	2·52	4·33	1·13	1·87	2·25	4·12	1·34	5·46
1921	1·38	2·53	3·91	1·09	1·46	2·25	3·71	1·29	5·00
1922	1·38	2·43	3·81	1·35	1·46	2·12	3·58	1·58	5·16
1923	1·30	2·51	3·81	1·01	1·38	2·22	3·60	1·22	4·82
1924	1·39	2·51	3·90	1·16	1·48	2·22	3·70	1·36	5·06
1925	1·56	2·52	4·08	1·07	1·62	2·24	3·86	1·29	5·15
1926	1·60	2·52	4·12	1·02	1·64	2·23	3·87	1·27	5·14
1927	1·57	2·54	4·11	1·32	1·63	2·20	3·83	1·60	5·43
1928	1·79	2·63	4·42	1·20	1·85	2·30	4·15	1.47	5·62

* 790 deaths in 1928 (Table LXIV).
† 790 deaths in Table LXIV and 178 from puerperal nephritis and albuminuria.

The distribution throughout the country of the mortality ascribed to childbirth is outlined in Table LXI.

Table LXI.—Distribution throughout England and Wales of Mortality of Women in Childbirth, per Thousand Children Born Alive, distinguishing Septic and Other Causes, 1928.

——	North.	Mid-lands.	South.	Wales.	England and Wales.
Sepsis.					
London	—	—	1·59	—	1·59
County Boroughs ..	2·09	1·69	1·94	2·50	1·97
Other Urban Districts..	1·93	1·64	1·71	2·21	1·80
Rural Districts	1·43	1·72	1·37	1·92	1·59
All Areas	1·95	1·68	1·62	2·18	1·79
Other Causes.					
London	—	—	2·00	—	2·00
County Boroughs ..	2·63	1·95	2·74	3·99	2·48
Other Urban Districts..	3·63	2·15	2·69	3·63	2·88
Rural Districts	3·01	2·60	2·28	4·34	2·80
All Areas	2.99	2·20	2·32	3·92	2·63
All Causes.					
London	—	—	3·59	—	3·59
County Boroughs ..	4·72	3·63	4·68	6·49	4·45
Other Urban Districts..	5·56	3·79	4·40	5·84	4·69
Rural Districts	4·44	4·31	3·65	6·25	4·39
All Areas	4·94	3·87	3·95	6·10	4·42

As regards the distinction between town and country, a tendency may as usual be noted for mortality from sepsis to increase, and for that from other causes to decrease, with urbanization. The most notable feature of the table, as also in 1927, is probably the low mortality in London from both septic and other causes. The London rate has been lowest in the table for non-septic causes during nine of the ten years, 1919–28, for which this table has been prepared, but its advantage for sepsis is confined to 1927 and 1928, before which the London septic rate was frequently above average.

As in six of the nine preceding years the all causes rate for Wales in 1928 is the highest in the table for each class of area. During the years 1919–28 this rate for Wales has been uniformly above the average for England and Wales to an extent varying from 19 to 43 per cent. The Welsh excess in 1928, 38 per cent., is, as always, much greater for non-septic causes than for sepsis, though even for sepsis no exception has yet occurred (from 1919 onwards) to the rule of Welsh excess. For non-septic causes this amounts to 49 per cent. in 1928. For Wales as a whole, this rate (non-septic causes) is higher in 1928 than in eight of the nine previous years.

Table LXII gives particulars of deaths ascribed to the puerperal state. These, for the first time, include statement of the civil condition of the deceased.

Table LXII.—England and Wales, 1928 : Deaths of Women Classed to Pregnancy and Childbearing.

Cause of Death.	All Ages.	Civil Condition.			Ages.						
		Single.	Married.	Widowed.	15–	20–	25–	30–	35–	40–	45 and upwards
143. (*a*) Abortion*	77	2	75	—	2	3	15	24	21	10	2
(*b*) Ectopic gestation	86	3	81	2	—	8	13	29	26	6	4
(*c*) *Other accidents of pregnancy* :—	*106*	*6*	*100*	—	*2*	*16*	*25*	*23*	*23*	*13*	*4*
Accidental hæmorrhage	7	—	7	—	—	—	1	2	2	1	1
Ante-partum hæmorrhage	40	2	38	—	—	2	6	11	10	9	2
Chorea	7	—	7	—	—	3	2	2	—	—	—
Uncontrollable vomiting	38	2	36	—	2	8	11	5	10	2	—
Carneous mole	1	—	1	—	—	—	—	—	1	—	—
Hydatid mole	4	—	4	—	—	1	—	1	—	1	1
Retroverted gravid uterus	1	—	1	—	—	—	1	—	—	—	—
Sacculated gravid uterus	1	—	1	—	—	—	1	—	—	—	—
Hydramnios	4	1	3	—	—	1	2	1	—	—	—
" Pregnancy " unqualified	3	1	2	—	—	1	1	1	—	—	—
144. *Puerperal haemorrhage* :—	*331*	*12*	*314*	*5*	—	*41*	*69*	*83*	*74*	*58*	*6*
Placenta prævia	171	7	161	3	—	16	33	40	45	33	4
Adherent or retained placenta	50	1	48	1	—	10	11	15	6	8	—
Accidental hæmorrhage	11	—	11	—	—	—	1	4	3	2	1
Post partum hæmorrhage	99	4	94	1	—	15	24	24	20	15	1
145. *Other accidents or abnormalities of childbirth* :—	*331*	*14*	*312*	*5*	*5*	*42*	*83*	*75*	*77*	*46*	*3*
Contracted pelvis	79	7	71	1	3	10	23	23	17	3	—
Craniotomy	2	—	2	—	—	—	1	1	—	—	—

* Besides these 77 deaths from abortion there were 224 (Single 20, Married 198 and Widowed 6) others from abortion with sepsis, which in accordance with the international scheme, are classified to puerperal sepsis, and 57 (Single 19, Married 36, Widowed 2) from criminal abortion (see Table 22, Part I).

Table LXII.—England and Wales, 1928: Deaths of Women Classed to Pregnancy and Childbearing—*continued.*

Cause of Death.	All Ages.	Civil Condition.			Ages.						
		Single.	Married.	Widowed.	15–	20–	25–	30–	35–	40–	45 and upwards
Cæsarean section (reason unstated)†	2	1	1	—	—	—	1	1	—	—	—
Malpresentation	28	—	28	—	1	4	5	8	7	2	1
Version	4	—	4	—	—	—	—	1	—	3	—
Instrumental delivery	18	2	16	—	—	8	5	3	1	1	—
Rupture of uterus	29	1	26	2	—	—	9	5	6	9	—
Rupture of vagina	1	—	1	—	—	1	—	—	—	—	—
Rupture of perineum	2	—	2	—	—	—	—	1	1	—	—
Laceration of vagina and cervix uteri	1	—	1	—	—	—	—	1	—	—	—
Rupture of superior mesenteric artery	1	1	—	—	—	—	—	—	1	—	—
Impacted fœtus	2	—	2	—	—	—	—	1	1	—	—
Inversion of uterus	10	—	10	—	—	3	4	1	2	—	—
Sub-involution of uterus	1	—	1	—	—	—	1	—	—	—	—
Inertia of uterus	20	—	20	—	—	1	4	3	7	5	—
Rigid cervix	1	—	1	—	—	—	—	1	—	—	—
Prolapse of uterus	2	—	2	—	—	—	1	—	—	1	—
Abnormal fœtus	7	—	7	—	—	—	1	1	3	1	1
Super fœtation	1	—	1	—	—	—	—	1	—	—	—
Adherent or retained placenta	8	—	8	—	—	2	1	2	2	1	—
Precipitate labour	3	—	3	—	—	—	—	—	3	—	—
Difficult and prolonged labour	85	2	83	—	—	9	23	16	22	15	—
Childbirth apart from above complications :—											
With secondary causes as follows :—											
Anæmia	5	—	4	1	1	1	—	2	—	1	—
Myocarditis	1	—	1	—	—	—	—	1	—	—	—
Cardiac dilatation	1	—	1	—	—	—	1	—	—	—	—
Pneumonia	2	—	2	—	—	1	—	1	—	—	—
Hypostatic pneumonia	1	—	1	—	—	—	—	—	—	1	—
Œdema of lungs	1	—	—	1	—	—	—	—	—	—	1
Suppression of urine	1	—	1	—	—	—	—	—	1	—	—
Gangrene of ovary	1	—	1	—	—	—	1	—	—	—	—
Without stated secondary cause	11	—	11	—	—	2	2	1	3	3	—
146. Puerperal sepsis :—	*1184*	*72*	*1099*	*13*	*32*	*202*	*325*	*269*	*248*	*101*	*7*
scarlet fever with sepsis	6	—	6	—	—	3	1	1	1	—	—
streptococcal infection	45	1	43	1	—	6	12	12	12	3	—
pneumococcal infection	4	—	4	—	—	—	1	2	1	—	—
staphylococcal infection	1	—	1	—	—	—	1	—	—	—	—
gonococcal infection	1	—	1	—	—	—	—	1	—	—	—
bacillus coli infection	2	—	1	1	1	—	—	—	1	—	—
bacillus Welchii infection	1	—	1	—	—	1	—	—	—	—	—
gas gangrene	2	—	2	—	—	—	1	—	1	—	—
septic phlegmasia alba dolens, phlebitis, thrombosis	51	3	47	1	1	5	11	16	13	5	—
septic bronchitis	1	—	1	—	—	—	—	—	1	—	—
septic pneumonia	5	—	5	—	—	1	1	—	1	2	—
septic endocarditis	3	—	3	—	—	—	1	—	2	—	—
septicæmia	539	30	504	5	15	100	160	120	106	37	1
sepsis	92	8	84	—	2	15	28	24	15	7	1
septic intoxication, sapræmia	52	5	47	—	2	10	10	10	14	6	—
pelvic peritonitis	22	1	20	1	—	4	11	4	2	1	—
peritonitis	79	5	72	2	2	16	17	16	18	10	—
salpingitis	18	—	18	—	1	6	5	2	3	1	—
metritis	9	—	9	—	—	2	1	3	—	1	2
endometritis	31	5	25	1	2	2	8	9	7	3	—
parametritis	21	4	17	—	1	3	4	3	5	5	—
perimetritis	3	—	3	—	—	2	—	—	1	—	—
erysipelas	2	—	2	—	—	—	1	—	1	—	—
pyæmia	34	3	31	—	1	4	9	5	11	2	2
pelvic cellulitis	26	—	26	—	1	3	11	4	3	4	—
cellulitis	7	—	7	—	—	2	1	2	2	—	—
pelvic abscess	7	1	6	—	—	3	3	—	1	—	—
blood poisoning	1	—	—	1	—	—	—	—	—	—	1
septic vaginal laceration	1	—	1	—	—	—	1	—	—	—	—
"puerperal fever"	118	6	112	—	3	14	26	35	26	14	—
147. (1) Puerperal phlegmasia alba dolens, not returned as septic	31	—	31	—	1	3	3	10	11	2	1
(2) Puerperal embolism and sudden death	188	6‡	181	1	—	21	45	50	45	24	3
148. Puerperal albuminuria and convulsions :—	*557*	*38*	*518*	*1*	*33*§	*95*	*138*	*112*	*113*	*60*	*6*
Puerperal nephritis, albuminuria, etc.	178	5	173	—	8	20	39	42	45	21	3
Puerperal convulsions	379	33	345	1	25§	75	99	70	68	39	3
149. Puerperal insanity	21	—	21	—	1	4	10	3	3	—	—
150. Puerperal diseases of the breast	8	—	8	—	—	1	4	1	1	1	—
Total	2,920				76§	436	730	679	642	321	36
Single		153‡	—	—	25§	54	38	21	11‡	4	—
Married		—	2,740	—	51	381	690	650	623	311	34
Widowed		—	—	27	—	1	2	8	8	6	2

† In addition, Cæsarean section was stated to have been performed in the case of 111 deaths included under other headings in this table—Placenta prævia 9, concealed accidental hæmorrhage 2, contracted pelvis 40, malpresentation 3, impacted fœtus 1, hydrocephalic fœtus 2, super fœtation 1, uterine inertia 1, rigid cervix of uterus 1, uterine prolapse 1, ventral fixation 1, difficult and prolonged labour 17, puerperal albuminuria and convulsions 16, puerperal sepsis 16—and of 35 other deaths included in Table LXIV.

‡ Including one divorced woman.

§ Including one aged 14 years.

The records of cases of puerperal fever notified are collated with those of births and of deaths from this cause in Table LXIII.

The proportion to live births of cases notified has risen from 30 in 1927 to 36. This proportion may have been affected by the compulsory notification of "puerperal pyrexia," which was in force throughout the year, having commenced on October 1, 1926. But as the rate of 36 in 1928 compares with 26–38 in the nine preceding years, it seems unlikely that any effect of the change upon the number of notifications of puerperal fever can have been of great importance. The records of notifications under both headings will be found in Tables 26–28, but as those for puerperal fever are evidently much more comparable with those of previous years under this head as they stand than if supplemented by the figures for puerperal pyrexia they will for the present be considered alone.

Except in the county boroughs of the South the notifications ratio is higher in 1928 than in 1927 for every section of Table LXIII. It was higher also in 1926 than in 1925 for all sections except the urban districts of the South.

Table LXIII.—Puerperal Fever, 1928: Prevalence and Fatality.

	Cases notified per 10,000 Live Births.					Deaths per 1,000 Cases notified.				
	North.	Mid-lands.	South.	Wales.	England and Wales.	North.	Mid-lands.	South.	Wales.	England and Wales.
London	—	—	41	—	41	—	—	390	—	390
County Boroughs ..	48	45	37	84	48	434	375	530	298	413
Other Urban Districts ..	26	29	29	26	28	735	558	597	847	647
Rural Districts	29	25	27	31	27	500	681	500	614	584
All Areas	39	34	35	40	36	505	499	468	545	497

As in each of the preceding nine years, for which it has been prepared, Table LXIII shews large urban excess in the proportion of cases of puerperal sepsis notified—much larger than the urban excess for deaths in Table LXI. As a rule there is a greater tendency in the rural districts than in the towns to leave unnotified cases of puerperal sepsis which ultimately prove fatal. In the rural districts of Wales, indeed, deaths have exceeded notification in several years, last in 1927.

The fatality ratio, or proportion of deaths to notifications, was lower in the county boroughs of the Midlands than in any other section of Table LXIII. This was the case also in five of the nine preceding years, so as the cases notified appear to be mildest in this section of the population it may be that for it notification is most complete.

Table LXIV shews the causes of deaths stated to have been complicated by the existence of the puerperal state. The largest numbers in this table are—respiratory tuberculosis 82, lobar

pneumonia 73,mitral disease 70, chronic nephritis 62, and influenza 52. For heart disease of all forms the total is 185. These deaths are of much the same type year after year, heart disease, pneumonia (conceivably septic), and influenza generally figuring prominently in the table. Of 54 deaths of females at all ages from acute yellow atrophy of the liver, and 37 at 15–45 (Table 17), 24 are seen to have been associated with pregnancy or child bearing.

Table LXIV.—England and Wales, 1928 : Deaths of Women not classed to Pregnancy and Childbearing, but returned as associated therewith.

Cause of Death.	All Ages.	Ages.						
		15–	20–	25–	30–	35–	40–	45 and upwards
1 (*b*) Paratyphoid fever ..	1	—	—	—	1	—	—	—
8 Scarlet fever	4	—	1	1	1	1	—	—
10 Diphtheria	2	—	—	1	1	—	—	—
11 Influenza	52	1	7	11	13	12	7	1
13 Mumps	1	1	—	—	—	—	—	—
23 Encephalitis lethargica..	3	—	1	—	—	2	—	—
25 (3) Glandular fever	1	—	—	—	—	1	—	—
29 Tetanus (bacillary) ..	1	—	—	—	—	1	—	—
31 Tuberculosis of respiratory system	82	2	16	21	20	10	13	—
32–37 Other forms of tuberculosis	13	—	2	4	2	2	3	—
38 Syphilis	8	—	—	2	3	2	1	—
40 (*a*) Gonorrhœa	1	—	1	—	—	—	—	—
43–49 Cancer	15	—	2	2	5	2	3	1
51 Rheumatic fever ..	10	1	3	4	—	1	1	—
52 (2) Rheumatoid arthritis ..	1	—	—	—	—	1	—	—
57 Diabetes	6	—	—	2	2	1	—	1
58 (*a*) Pernicious anæmia ..	14	—	3	2	4	5	—	—
60 (*a*) Exophthalmic goitre ..	7	—	2	—	3	2	—	—
60 (*b3*) Goitre	3	—	2	—	1	—	—	—
65 (*a*) Leukæmia	3	—	—	1	1	—	1	—
69 (1) Purpura hæmorrhagica	1	—	—	1	—	—	—	—
69 (3) Obesity	1	—	—	—	—	1	—	—
73 Hæmatomyelia	1	—	—	1	—	—	—	—
74 Cerebral thrombosis ..	2	1	—	—	1	—	—	—
78 Epilepsy	8	1	1	1	1	4	—	—
82 Neuralgia of super orbital nerve ..	1	—	—	—	1	—	—	—
84 (3) Disseminated sclerosis	1	—	—	1	—	—	—	—
85 Orbital cellulitis ..	1	—	—	1	—	—	—	—
86 (2) Otitis media	3	—	—	1	2	—	—	—
88 (1) Infective endocarditis ..	2	—	—	—	2	—	—	—
88 (2) Other acute endocarditis	5	—	1	—	2	2	—	—
88 (3) Acute myocarditis ..	19	—	—	4	2	8	5	—
89 Angina pectoris ..	1	—	—	—	—	—	1	—
90 (2) Mitral valve disease ..	70	2	7	19	15	17	9	1
90 (1–3–4) Other or unspecified valvular disease ..	48	1	4	17	8	8	8	2
90 (5) Fatty heart	13	—	—	3	4	6	—	—
90 (6–7) Other or unspecified myocardial disease ..	9	—	—	—	—	3	5	1
90 (8–9) Heart disease undefined	18	—	2	4	3	6	3	—
91 (*a*) Cerebral aneurysm ..	1	—	—	1	—	—	—	—
92 Embolism and thrombosis (not cerebral) ..	3	—	1	—	1	1	—	—

Table LXIV.—England and Wales, 1928 : Deaths of Women not classed to Pregnancy and Childbearing, but returned as associated therewith—*continued.*

	Cause of Death.	All Ages.	Ages.						
			15–	20–	25–	30–	35–	40–	45 and upwards–
93	Diseases of the veins ..	2	—	—	—	1	1	—	—
99	Bronchitis	14	—	—	3	6	2	2	1
100	Broncho-pneumonia ..	24	2	2	4	9	4	3	—
101 (*a*)	Lobar pneumonia ..	73	2	9	18	21	13	9	1
101 (*b*)	Pneumonia (type not stated)..	30	—	5	6	10	5	4	—
102 (1)	Empyema	1	1	—	—	—	—	—	—
102 (2)	Other pleurisy	8		1	2	1	3	1	—
103	Œdema of lungs ..	2	—	1	—	1	—	—	—
105	Asthma	5	1	—	1	1	—	1	1
108 (1)	Pyorrhœa	1	—	1	—	—	—	—	—
109 (1)	Tonsillitis	1	—	—	—	—	1	—	—
109 (2)	Retropharyngeal abscess	1	—	—	—	—	1	—	—
111 (*a*)	Ulcer of the stomach ..	10	—	2	3	—	2	3	—
112 (1)	Inflammation of stomach	2	—	1	1	—	—	—	—
112 (2)	Dilatation of the stomach	1	—	—	—	—	1	—	—
113–114	Diarrhœa and enteritis	3	—	—	2	—	1	—	—
117	Appendicitis	15	1	5	4	4	1	—	—
118 (*a*)	Hernia	3	—	—	—	—	1	2	—
118 (*b*)	Intestinal obstruction ..	32	1	7	4	7	6	6	1
119	Intestinal paresis.. ..	1	—	—	—	—	1	—	—
120	Acute yellow atrophy of liver	24	—	7	4	7	5	1	—
124	Other diseases of the liver	2	—	—	—	—	1	1	—
125	Sub acute pancreatitis..	1	—	—	—	1	—	—	—
126	Peritonitis of unknown origin	1	—	—	—	1	—	—	—
129	Chronic nephritis ..	62	—	8	6	21	14	13	—
131	Infarct of kidney ..	1	—	—	—	—	1	—	—
132	Calculus of kidney ..	2	—	1	—	—	—	1	—
137	Cysts and other tumours of the ovary not returned as malignant ..	6	—	—	1	2	3	—	—
138 (1)	Salpingitis	2	—	—	1	1	—	—	—
139	Tumours of the uterus not returned as malignant	10	—	—	2	1	1	6	—
153 (1)	Cellulitis of arm ..	1	—	—	—	1	—	—	—
165-203	Violence	13	—	4	2	3	3	1	—
	Total	790†	18	110	169	198	170	114	11
	Single	49*	10	14	11	8*	4	2	—
	Married	732	8	96	157	188	163	109	11
	Widowed	9	—	—	1	2	3	3	—

* Including 2 divorced women.

† Of these 790 deaths, 230 were stated to be associated with pregnancy, 83 with abortion, 43 with premature delivery, and 434 with childbirth.

204, 205. **Ill-defined Causes of Death.**—These headings in the International List of Causes of Death, to which 837 deaths have been allocated, exclude the ill-defined diseases of infancy and old age, 160 (1) and 164 (2). In the more comprehensive sense

resulting from their inclusion, the deaths from ill-defined causes in 1928 numbered 21,149, or 4·59 per cent. of the total, as compared with 5·11 in 1927 and 9·67 in 1911.

Inquiries sent to medical practitioners and coroners requesting further information as to indefinitely certified deaths amounted to 7,590, and to these 6,904 replies were received, with results to classification, some of the most important of which are set out in Table LXV.

Table LXV.—England and Wales, 1928: Replies to Inquiries respecting Indefinitely Certified Causes of Death.

Subject of Inquiry.	Replies received.	Replies amplifying previous information.	Deaths allocated as the result of inquiry to certain headings.
Croup	33	32	Diphtheria 1, Laryngismus stridulus 3, Laryngitis 14.
Membranous laryngitis	4	4	Diphtheria 2, Pulmonary tuberculosis 1.
Pyæmia, septicæmia, etc.	168	135	Diseases of the teeth and gums 14, Tonsillitis 8, Puerperal sepsis 9, Diseases of the skin 15.
Tuberculosis ..	121	121	Tuberculosis of the respiratory system 70, Tuberculosis of the intestines and peritoneum 5, Tuberculosis of vertebral column 4, Tuberculosis of joints 5, Tuberculosis of bones 4, Disseminated tuberculosis 19, other forms of tuberculosis 8.
Cancer (part or organ not stated) ..	1,038	987	Part or organ stated in 977 cases.
Cerebral tumour (P.M. cases)	204	178	Encephalitis lethargica 1, Syphilis 8, Cancer 41, Glioma 83.
Tumour of other sites	699	547	Syphilis 3, Cancer 410.
Rheumatism ..	424	423	Rheumatic fever 129, Chronic rheumatism 6, Osteo-arthritis 3, Rheumatic heart disease 257.
Encephalitis ..	161	150	Measles 1, Influenza 11, Polio-encephalitis 2, Encephalitis lethargica 52, Tuberculosis of the nervous system 1, Syphilis 1, Cerebral abscess 1, other forms of encephalitis 49, Meningitis 2.
Basal or basic meningitis	39	30	Meningococcal meningitis 10, Tuberculosis of the nervous system 8, Meningitis—other forms 9.
Posterior or post basal or basic meningitis	66	62	Meningococcal meningitis 43, Tuberculosis of the nervous system 8, Meningitis—other forms 7.
Cerebro spinal meningitis	100	99	Encephalitis lethargica 2, Meningococcal meningitis 81, Tuberculosis of the nervous system 4, Meningitis —other forms 6.
Spinal sclerosis ..	17	17	Syphilis 2, Tabes dorsalis 3, other diseases of the spinal cord 5, Disseminated sclerosis 7.

Table LXV.—England and Wales, 1928: Replies to Inquiries respecting Indefinitely Certified Causes of Death.—*continued.*

Subject of Inquiry.	Replies received.	Replies amplifying previous information.	Deaths allocated as the result of inquiry to certain headings.
Cerebral sclerosis ..	18	18	Syphilis 1, Diseases of the spinal cord 3, Disseminated sclerosis 7, Arterio sclerosis 6.
Paraplegia	47	39	Syphilis 5, Diseases of the spinal cord 17, Disseminated sclerosis 2.
General paralysis (outside asylums) ..	29	28	Cerebral hæmorrhage, apoplexy 3, General paralysis of the insane 21.
Paralysis	15	12	Diphtheria 1, Diseases of the spinal cord 2, Cerebral hæmorrhage, apoplexy 2, Disseminated sclerosis 3.
Aortitis, arteritis and endarteritis ..	73	66	Syphilis 33, Arterio sclerosis 9.
Fibroid phthisis ..	118	111	Influenza 1, Tuberculosis of respiratory system 82, Chronic interstitial pneumonia 17.
Hæmoptysis ..	38	32	Tuberculosis of the respiratory system 17, Syphilis 1.
Stomatitis	19	18	Thrush, aphthous stomatitis 3.
Stricture of œsophagus	36	31	Cancer 17.
Hæmatemesis ..	14	12	Ulcer of stomach or duodenum 8.
Pyloric obstruction, stenosis, etc. ..	45	42	Syphilis 1, Cancer 8, Ulcer of stomach or duodenum 15.
Jaundice	51	45	Influenza 2, Spirochætosis ictero-hæmorrhagica 1, Cancer 11, Acute yellow atrophy of the liver 2, Biliary calculi 4.
Peritonitis	122	91	Influenza 1, Tuberculosis of the peritoneum 4, Cancer 2, Ulcer of stomach and duodenum 5, Appendicitis 21, Intestinal obstruction 8, Diseases of female genital organs 7, Puerperal sepsis 10.
Pemphigus of infants	105	95	Syphilis 16, Diseases of the umbilicus 2.
Hydrocephalus ..	63	60	Meningococcal meningitis 1, Tuberculosis of the nervous system 4, Syphilis 1, Cerebral tumour 1.
Violence	474	459	Precise form of suicide 86, Injury by drowning 8, Injury by fall 63, Injury in mines and quarries 43, Injury by machines 7, Injury by crushing 112.
Syncope, heart failure (ages 1–70) ..	103	91	Influenza 2, Syphilis 1, Diseases of the heart 62, Arterio sclerosis 8, Bronchitis 5.
Operation	377	366	Cancer 31, Tonsillitis 7, Ulcer of the stomach and duodenum 18, Appendicitis 12, Hernia, intestinal obstruction 37, Biliary calculi 42, Diseases of the prostate 12, Ovarian tumour 5, Uterine tumour 27, Congenital malformations 5, Violence 7.
Other indefinite forms of certificate ..	2,083	1,871	———
Total ..	6,904	6,272	———

The total additions to certain definite headings resulting from these enquiries were as follows:—To influenza 37; to encephalitis lethargica 59; to meningococcal meningitis 139; to tuberculosis of the respiratory system 206; to other forms of tuberculosis 144; to venereal diseases 124; to cancer 582; to diseases of the spinal cord 50; to general paralysis of the insane 24; to disseminated sclerosis 22; to arterio-sclerosis 70; to ulcer of the stomach or duodenum 92; to appendicitis and typhlitis 58; to biliary calculi 63; to diseases of the prostate 47; to puerperal sepsis 67; and to congenital malformations 70.

In addition to the foregoing, 1,298 inquiries were addressed to medical practitioners who had initialled statement "B" on the back of the new form of medical certificate, thereby indicating the possibility of being in a position to furnish additional information respecting the certified cause of death as the result of a P.M. or laboratory examination which was not available at the time of signing the certificate. Of the 977 replies received to these inquiries, 390 amended the original certification.

Anæsthetics.—The usual annual statement is continued of deaths during or connected with the administration of an anæsthetic. This is obtained by secondary tabulation of these deaths, since the primary tabulation, represented by Table 17, classifies all such deaths to the disease or injury on account of which the anæsthetic was administered.

The total number of deaths in Table LXVI, 656, exceeds that for 1927 by 60, and is more than double that of any year prior to 1916. During the 18 years for which fully comparable figures can be stated these deaths first increased slowly from 276 in 1911 to 336 in 1922 (366 in 1920) and then rapidly to 656 in 1928.

For the years before 1911 the record is contained in the tables of accidental deaths, but certain causes—strangulated hernia and cancer—were at this time preferred in tabulation to the anæsthetic used. In 1928 the 656 deaths included 102 associated with cancer, and 38 with hernia. So for comparison with the years prior to 1911 the number of deaths should be reduced to 516. But during 1901–10 the deaths ranged from 133 (1901) to 234 (1910).

Subject to allowance, on the scale indicated by this reduction, for the more comprehensive nature of the figures from 1911 onwards, the records of the present century may be compared as in Table LXVII.

Table LXVI.—England and Wales, 1928: Deaths under or connected with the Administration of various Anæsthetics.

Anæsthetic.		Age.														
		All Ages.	0–	1–	5–	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	65–
Chloroform	M.	75	2	6	5	2	2	4	1	4	2	4	6	8	12	17
	F.	36	1	3	2	–	2	3	9	5	6	1	1	2	–	1
Chloroform and ether	M.	120	7	11	5	2	3	10	1	4	6	13	8	3	23	24
	F.	80	1	4	2	–	1	5	2	9	7	5	8	10	15	11
Chloroform, ether and ethyl chloride	M.	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–
	F.	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–
Chloroform, ether and "novocaine"	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Chloroform and ethyl chloride	M.	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–
Ether	M.	118	4	22	12	6	5	4	4	4	3	8	7	11	17	11
	F.	108	6	9	9	5	4	10	8	5	10	9	5	8	11	9
Ether and ethyl chloride	M.	9	1	2	2	–	–	–	–	–	2	–	1	–	–	1
	F.	7	–	3	–	–	–	–	–	–	1	1	–	1	1	–
Ether and "stovaine"	M.	2	–	–	–	–	–	–	1	–	–	–	–	–	1	–
	F.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Ether and "stovocaine"	F.	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Ether, scopolamine and morphia	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–
A.C.E. mixture	M.	5	1	–	1	–	–	–	–	–	–	1	–	–	1	1
Ethyl chloride	M.	6	–	3	1	–	–	–	1	–	–	–	1	–	–	–
	F.	3	–	–	1	–	–	–	–	–	–	1	–	1	–	–
Nitrous oxide	M.	18	–	1	1	–	1	–	–	–	–	2	1	4	6	2
	F.	12	–	–	2	–	–	–	1	2	1	–	2	1	2	1
"Stovaine"	M.	2	–	–	–	–	–	–	–	–	–	–	–	–	2	–
	F.	3	–	–	–	–	1	–	–	–	–	–	–	–	2	–
"Novocaine"	M.	9	–	–	–	–	1	–	–	1	1	–	1	–	2	3
	F.	6	–	1	–	–	–	1	–	–	1	–	–	–	–	3
"Kerocaine"	M.	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Cocaine	M.	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–
	F.	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–
"Tropococaine"	F.	3	–	–	–	–	–	–	–	1	–	–	–	–	–	2
"Smidal"	M.	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Kind not stated	M.	13	–	2	2	2	–	–	–	2	–	–	1	1	1	2
	F.	10	–	1	–	–	–	–	1	–	1	–	2	2	1	2
Total	M.	384	15	48	29	12	12	18	8	15	14	29	27	28	67	62
	F.	272	8	21	16	5	8	19	22	22	27	18	19	25	33	29

Table LXVII.—England and Wales: Deaths under or associated with Anæsthesia, 1901-28.

Year.	Males.									Females.								
	All ages	0–.	5–.	15–.	25–.	35–.	45–.	55–.	65–.	All ages	0–.	5–.	15–.	25–.	35–.	45–.	55–.	65–
Yearly average:																		
1901–05	*95	14	20	9	13	16	11	7	4	53	6	9	7	11	8	8	3	2
1906–10	*125	26	20	12	16	18	16	9	8	77	7	14	9	18	11	10	4	3
1911–15	167	30	23	14	20	28	24	16	10	116	14	17	15	16	22	18	10	5
1916–20	188	36	25	25	27	22	20	19	13	119	11	16	14	21	22	17	7	9
1921–25	229	40	28	20	18	27	36	37	24	169	20	17	17	30	29	25	17	12
1921 ..	204	30	29	16	16	19	34	30	30	133	16	23	16	24	21	19	11	3
1922 ..	185	29	21	16	9	27	30	35	18	151	16	15	12	29	31	26	12	10
1923 ..	262	45	37	29	17	38	35	34	27	184	22	23	14	23	32	32	23	15
1924 ..	245	51	30	21	25	21	42	39	16	184	26	11	30	29	31	21	18	18
1925 ..	249	43	25	17	23	28	39	45	29	193	22	14	15	43	32	29	23	15
1926 ..	306	57	43	23	29	34	39	43	38	250	32	22	29	35	44	51	23	14
1927 ..	328	43	51	25	20	30	42	70	47	268	24	28	29	46	47	40	35	19
1928 ..	384	63	41	30	23	43	55	67	62	272	29	21	27	44	45	44	33	29

* Excluding deaths from cancer and strangulated hernia—*see* above.

Deaths in later periods compared with those of 1911–15 taken as 100.

Yearly average:																		
1911–15	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1916–20	113	120	109	179	135	79	83	119	130	103	79	94	93	131	100	94	70	180
1921–25	137	133	122	143	90	96	150	231	240	146	143	100	113	188	132	139	170	240
1921 ..	122	100	126	114	80	68	142	188	300	115	114	135	107	150	95	106	110	60
1922 ..	111	97	91	114	45	96	125	219	180	130	114	88	80	181	141	144	120	200
1923 ..	157	150	161	207	85	136	146	213	270	159	157	135	93	144	145	178	230	300
1924 ..	147	170	130	150	125	75	175	244	160	159	186	65	200	181	141	117	180	360
1925 ..	149	143	109	121	115	100	163	281	290	166	157	82	100	269	145	161	230	300
1926 ..	183	190	187	164	145	121	163	269	380	216	229	129	193	219	200	283	230	280
1927 ..	196	143	222	179	100	107	175	438	470	231	171	165	193	288	214	222	350	380
1928 ..	230	210	178	214	115	154	229	419	620	234	207	124	180	275	205	244	330	580

The increase since 1911–15 is very general in its application to sex and age, but affects chiefly the aged of both sexes. It is least for males of 25–45, whose deaths till recently tended rather to decrease.

In 1928, as in most other recent years, deaths of females were in excess at ages 25–45, and of males at other ages.

The anæsthetic agents recorded on death certificates have altered greatly during the present century. The following statement records the proportion, per cent. of all deaths under anæsthetics of stated type, associated with the exclusive administration at different periods of chloroform, ether, chloroform and ether, and alcohol chloroform and ether (A.C.E. mixture) respectively :—

	Chloroform.	*Ether.*	*Chloroform and ether.*	*A.C.E.*	*Other or mixed.*
1901–05	84	7	2	3	4
1906–10	76	9	8	2	5
1911–15	62	14	15	4	5
1916–20	45	19	27	3	6
1921–25	23	28	34	4	11
1927	18	30	30	2	20
1928	17	36	32	1	14

So far as these figures can be taken as any indication of the type of anæsthetic chiefly used, as to which their exclusive association with fatalities makes them an unreliable guide, the increase of deaths under anæsthesia has occurred notwithstanding very general substitution of the safer agent, ether, for the more dangerous chloroform, which was associated with over four-fifths of the deaths at the beginning of the century, but with less than one-fifth in 1928. The increased proportion of fatalities with "other or mixed" anæsthetics is associated with rapidly increasing record of the use of certain agents, especially ethyl chloride, stovaine, and novocaine, which till recently were rarely mentioned on death certificates.

Proportions of deaths, per 10,000 under anæsthetics of stated type, associated with ethyl chloride, alone and in combination, and with nitrous oxide, stovaine, and novocaine as the only anæsthetic used, have been as follows at the periods stated :—

	Ethyl Chloride				
	Alone.	*In combination.*	*Nitrous Oxide.*	*Stovaine.*	*Novocaine.*
1916–20 ..	155	36	146	91	9
1921–25 ..	157	151	308	186	81
1926 ..	134	363	286	172	57
1927 ..	246	704	563	158	141
1928 ..	142	300	474	79	237

It need scarcely be pointed out that these proportions must depend upon the extent to which the various agents are used as well as upon the risk attaching to them. But unfortunately the deaths associated with each type of anæsthetic cannot be collated with the number of its administrations. It is not even possible to say whether, or to what extent, the rapid increase in the number of these deaths implies increased mortality under anæsthetics. The number of administrations is known to be increasing very rapidly, but cannot be stated. The deaths tabulated, moreover, can only be those under, not those caused by, anæsthesia. It is impossible from certification to distinguish between deaths from operation under anæsthesia and deaths due to the anæsthetic itself, and, this being so, it seems possible that the increase of this type of death may be partly dependent upon increase of boldness in operative surgery.

The conditions chiefly calling for anæsthesia in these cases are as follows—the list being arranged in the order of the titles of the International List to which the deaths were assigned :—

32–36	Non-respiratory tuberculosis ..	12	108 (1) (pt.)	Extraction of teeth	26
43–49	Cancer	102	109 (1)	Tonsillitis and adenoid vegetations	26
86 (1)	Diseases of the mastoid sinus.	14	111	Gastric and duodenal ulcer ..	34
97	Diseases of the nasal fossæ and annexa ..	11	117	Appendicitis ..	53
102 (1)	Empyema ..	26			

118(*a*)	Hernia	38	139 (pt.)	Uterine fibroids	9
118(*b*)	Intestinal obstruction	33	143–149	Childbirth and abortion ..	34
123	Biliary calculi ..	14	155 (1)	Acute infective osteo-myelitis.	4
124 (pt.)	Diseases of gall bladder ..	5	159	Congenital malformations ..	20
135	Diseases of the prostate ..	9	165–203	Violence ..	39
136 (pt.)	Circumcision ..	6			

Of the 656 deaths in Table LXVI, 515 (79 per cent.) were classed to the 20 headings enumerated in this list, the remainder being of very varied causation and including non-malignant tumours 13, exophthalmic goitre 7, peritonitis 6, and Ludwig's angina 4 deaths. The composition of this list changes little from year to year.

The proportion of these deaths reported from different classes of institutions, etc., in various sections of the country, is stated in the following table, in which, as place of occurrence is evidently of more interest for these deaths than place of residence, they have been tabulated by area of registration, the registration counties of former Annual Reports (before 1911) being grouped into five sections of the country on the lines indicated in the footnote to Table V.

Table LXVIII.—Deaths under Anæsthetics Registered in 1928. Distribution by Part of Country and Place of Occurrence.

		Hospitals.	Poor Law Institutions.	Mental Hospitals.	Nursing Homes.	Elsewhere.	Total.
North ..	M.	106	8	1	7	14	136
	F.	67	9	—	7	11	94
Midlands	M.	66	15	—	2	7	90
	F.	41	11	—	9	6	67
London ..	M.	59	11	—	2	6	78
	F.	36	14	—	2	4	56
Remainder of South	M.	48	9	3	7	2	69
	F.	30	7	—	4	6	47
Wales ..	M.	11	—	—	—	—	11
	F.	6	—	—	—	2	8
England and Wales	M.	290	43	4	18	29	384
	F.	180	41	—	22	29	272

The features of this table have changed little during 1925–28, the only years for which it has been published. During these years the proportion of hospital deaths has varied only from 80 per cent. of the total in 1926 to 72 in each of the other three years; for poor-law institutions the percentage has been 8–13 in different years; for mental hospitals never over 1; for nursing homes 4–7; and for non-institutional deaths 7–10.

The distribution is equally stable for the sections of the country distinguished, the North furnishing 31–35 per cent. of the deaths in each of the four years, London 20–28, the remainder of

the South 12–18, and Wales 3–5 per cent. These proportions, being evidently in general correspondence with the respective populations, do not seem to suggest any markedly contrasted incidence of the deaths.

Status Lymphaticus and Anaesthetics.—In addition to the 173 deaths from status lymphaticus primarily classified to diseases of the thymus in Table 17, there were 36 deaths under anæsthetics in the case of which record was made of the presence of this condition, but which have been referred in tabulation to the condition occasioning the administration of the anaesthetic.

The sex and age distribution of these was as follows :—

	All Ages	0–	5–	10–	15–	20–	25–	35–
Males ..	23	12	5	–	3	3	–	–
Females ..	13	5	5	–	–	–	2	1

VALIDITY OF CERTIFICATION.

Table LXIX provides a record of the extent to which the diagnosis of the causes of death dealt with was confirmed, for 1928, by *post mortem* examination or in other ways, such as operation (recorded on the death certificate) or bacteriological or other pathological examination after death without autopsy.

The Births and Deaths Registration Act of 1926 led to various changes in the form of certificate of cause of death which have provided the material for this table. Thus the form of medical certificate of cause of death newly introduced, under this Act, in 1927 (Statistical Review for 1927, page 147) requires statement for each death, whether a *post mortem* examination has been made or not ; and it also includes a blank form of notice by the certifying practitioner that he may at a later date be in a position to afford information as to the cause of death additional to that in his certificate, thus providing for cases where autopsy or other pathological examination was not complete at the time of framing the certificate.

The information so provided shows that during the year diagnosis was confirmed by *post mortem* examination in 42,169 instances or for 9·2 per cent. of all deaths registered (10·6 for males and 7·7 for females). Diagnoses confirmed by other examination numbered 12,806, or 2·8 per cent. of the total deaths, 2·7 per cent. for males, and 2·9 for females. These figures are put on record as affording some assistance to the assessment of the degree of validity attaching to the classification of causes of death based on the certificates received, and, with the same object, Table LXIX has been prepared to show, for each cause dealt with, the proportion of recorded cases confirmed in one or other of these ways.

Table LXIX.—England and Wales, 1928. Deaths from Causes confirmed by Post Mortem Examination or otherwise per 1,000 total Deaths ascribed to each Cause.

Note.—A blank is left when no deaths were ascribed to the particular cause, and in the "Persons" column when the deaths belonged to one sex only.

A — signifies that no operation, post mortem, or other examination was made in the case of the deaths so ascribed.

International List No.	Causes of Death.	Males	Females	Persons	International List No.	Causes of Death.	Males	Females	Persons
	ALL CAUSES	**132**	**106**	**119**	18	Yellow fever			
1–42	**I.—Epidemic, Endemic and Infectious Diseases** ..	**88**	**71**	**80**	19	Spirochætosis ictero-hæmorrhagica	1000		
1	Enteric fever	247	327	288	20	Leprosy	—		
	(*a*) Typhoid fever ..	280	345	314	21	Erysipelas	77	58	68
	(*b*) Paratyphoid fever ..	148	261	200	22	Acute poliomyelitis ..	111	191	144
2	Typhus	—				(1) Poliomyelitis ..	103	91	98
3	Relapsing fever (Spirillum obermeieri)					(2) Polioencephalitis ..	129	375	236
					23	Encephalitis lethargica ..	88	100	94
4	Mediterranean fever ..				24	Meningococcal meningitis	195	203	199
5	Malaria	194	400	222	25	Other epidemic diseases ..	111	29	75
6	Small-pox	53	—	38		(1) German measles ..	—	—	—
7	Measles	53	44	49		(2) Varicella	30	34	32
8	Scarlet fever	91	82	86		(3) Other diseases included under 25	800	—	667
9	Whooping cough	25	23	24					
10	Diphtheria	86	91	88	26	Glanders			
11	Influenza	37	32	35	27	Anthrax	556	333	500
	(*a*) 1. With pneumonic complications ..	36	38	37	28	Rabies			
	(*a*) 2. With other pulmonary complications	30	25	27	29	Tetanus	243	333	261
					30	Mycoses	258	97	206
	(*b*) 1. With non-pulmonary complications	49	34	41		(1) Actinomycosis ..	341	158	286
						(2) Other mycoses ..	91	—	59
	(*b*) 2. Without stated complication ..	26	20	23	31–37	Tuberculosis (all forms) ..	89	71	81
12	Miliary fever				31	Respiratory system ..	72	47	61
13	Mumps	273	—	120	32	Nervous system ..	140	118	130
14	Asiatic cholera				33	Intestines and peritoneum	197	164	180
15	Cholera nostras	—			34	Vertebral column ..	116	85	102
16	Dysentery	464	648	548	35	Joints	88	146	111
	(*a*) Amœbic	333	1000	385	36	Other organs	211	257	233
	(*b*) Bacillary	765	600	676		(*a*) Skin and subcutaneous tissue ..	—	50	38
	(*c*) Other or unspecified	400	660	524		(*b*) Bones (vertebral column excepted	143	172	154
17	Plague					(*c*) Lymphatic system (abdominal glands excepted) ..	245	293	267
	(*a*) Bubonic					(*d*) Genito-urinary system	244	339	285
	(*b*) Pneumonic					(*e*) Others in 36 ..	250	500	438
	(*c*) Septicæmic								
	(*d*) Not otherwise defined								

ble LXIX.—England and Wales, 1928. Deaths from Causes confirmed by Post Mortem Examination or otherwise per 1,000 total Deaths ascribed to each Cause—*continued.*

Note.—A blank is left when no deaths were ascribed to the particular cause, d in the "Persons" column when the deaths belonged to one sex only. A — signifies that no operation, post mortem, or other examination was made the case of the deaths so ascribed.

er-nal No.	Causes of Death.	Males	Females	Persons	International List No.	Cause of Death.	Males	Females	Persons
	Tuberculosis—*cont.*				53	Scurv	389	333	381
7	Disseminated tuberculosis	205	234	219	54	Pellagra	—	250	200
	(*a*) Acute	286	302	294	55	Beri-beri			
	(*b*) Chronic or unstated	154	181	166	56	Rickets	103	74	91
8	Syphilis	235	148	204	57	Diabetes	57	54	56
9	Soft chancre				58	Anæmia, chlorosis ..	103	74	86
0	Gonococcal infection ..	218	286	237		(*a*) Pernicious anæmia ..	84	53	65
	(1) Gonococcal infection (ophthalmia excepted)	238	667	314		(*b*) Other anæmias and chlorosis	224	213	218
	(2) Gonorrhœal or purulent ophthalmia ..	154	—	80	59	Diseases of the pituitary gland	286	182	222
1	Purulent infection, septicæmia	306	226	273	60	Diseases of the thyroid gland	209	133	143
2	Other infectious diseases..	625	500	556		(*a*) Exophthalmic goitre	235	154	163
	(1) Vaccinia	625	500	556		(*b*) 1. Myxœdema ..	83	26	32
	(2) Other diseases included under 42					(*b*) 2. Cretinism ..	174	43	109
39	**II.—General Diseases not included in I. 1–42**	**165**	**145**	**154**		(*b*) 3. Other diseases of the thyroid gland	250	161	171
49	Cancer, Malignant disease	176	165	170	61	Diseases of the parathyroid glands	—	118	57
3	Buccal cavity	126	107	123		(1) Tetany	—	118	57
4	Pharynx, œsophagus, stomach, liver and annexa	135	97	117		(2) Other diseases of the parathyroid glands			
5	Peritoneum, intestines and rectum	214	162	188	62	Diseases of the thymus ..	852	800	832
6	Female genital organs		153		63	Diseases of the adrenals ..	222	208	214
7	Breast	255	269	269	64	Diseases of the spleen ..	450	364	405
8	Skin	136	78	115	65	Leukæmia, lymphadenoma	228	179	207
9	Other or unspecified organs	224	189	212		(*a*) Leukæmia	266	207	240
0	Tumours not returned as malignant (brain and female genital organs excepted)	314	249	283		(*b*) Lymphadenoma (Hodgkin's disease) ..	178	137	161
1	Rheumatic fever ..	88	79	83	66	Alcoholism (acute or chronic)	203	176	194
2	Chronic rheumatism, osteo-arthritis, gout	32	21	25	67	Chronic poisoning by mineral substances ..	482	714	508
	(1) Chronic rheumatism..	21	17	19		(1) Occupational lead poisoning	453	833	492
	(2) Rheumatoid and osteo-arthritis	36	22	26		(2) Other chronic poisoning by mineral substances	1000	—	750
	(3) Gout	25	—	21	68	Chronic poisoning by organic substances ..	600	200	400

Table LXIX.—England and Wales, 1928. Deaths from Causes confirmed by Post Mortem Examination or otherwise per 1,000 total Deaths ascribed to each Cause—*continued.*

Note.—A blank is left when no deaths were ascribed to the particular cause, and in the "Persons" column when the deaths belonged to one sex only.

A — signifies that no operation, post mortem, or other examination was made in the case of the deaths so ascribed.

International List No.	Causes of Death.	Males	Females	Persons
69	Other general diseases ..	196	153	173
	(1) Purpura	227	203	214
	(2) Hæmophilia	114	231	150
	(3) Other diseases included under 69	224	86	138
70–86	**III.—Diseases of the Nervous System and Sense Organs .. ..**	**119**	**83**	**100**
70	Encephalitis	517	362	445
	(1) Cerebral abscess ..	641	459	560
	(2) Other diseases included under 70 ..	322	232	278
71	Meningitis..	214	177	198
72	Tabes dorsalis (locomotor ataxy)	52	87	58
73	Other diseases of the spinal cord	79	48	66
74	Cerebral hæmorrhage, apoplexy, etc.	48	42	45
	(*a*) 1. Cerebral hæmorrhage so returned	52	46	49
	(*a*) 2. Apoplexy, lesion unstated ..	27	33	30
	(*b*) 1. Cerebral embolism	30	24	26
	(*b*) 2. Cerebral thrombosis	35	29	31
75	Paralysis of unstated origin	5	15	11
	(*a*) Hemiplegia	2	14	9
	(*b*) Other forms of paralysis	23	27	25
76	General paralysis of the insane	448	433	445
77	Other forms of insanity ..	257	248	251
78	Epilepsy	192	145	169
79, 80	Convulsions (non-puerperal)	62	59	61
81	Chorea	—	61	48
82	Hysteria and neuritis ..	167	65	105
83	Cerebral softening ..	127	90	106
84	Other diseases of the nervous system	153	132	143
	(1) Idiocy, imbecility ..	132	119	126
	Other diseases of the nervous system—*cont.*			
	(2) Cerebral tumour ..	349	306	328
	(3) Disseminated sclerosis	37	48	43
	(4) Paralysis agitans ..	27	17	23
	(5) Other diseases included under 84	153	114	133
85	Diseases of the eye and annexa	366	237	304
86	Diseases of the ear and of the mastoid sinus ..	395	377	387
	(1) Diseases of the mastoid sinus	508	474	492
	(2) Diseases of the ear ..	339	322	332
87–96	**IV.—Diseases of the Circulatory System .. .. ..

ble LXIX.—England and Wales, 1928. Deaths from Causes confirmed by Post Mortem Examination or otherwise per 1,000 total Deaths ascribed to each Cause—*continued.*

Note.—A blank is left when no deaths were ascribed to the particular cause, in the "Persons" column when the deaths belonged to one sex only.

A — signifies that no operation, post mortem, or other examination was de in the case of the deaths so ascribed.

r-nal No.	Causes of Death.	Males	Females	Persons	International List No.	Causes of Death.	Males	Females	Persons
	Diseases of the arteries ..	91	67	80	101	Pneumonia (lobar or not otherwise defined) ..	127	120	124
	(*a*) Aneurysm	443	550	467		(*a*) Lobar	138	139	139
	(*b*) Arterio-sclerosis ..	67	54	61		(*b*) Not otherwise defined	99	79	91
	1. With record of cerebral vascular lesion	55	47	51	102	Pleurisy	230	182	211
	2. Without record of cerebral vascular lesion	74	60	68		(1) Empyema	359	412	375
	(*c*) Other diseases of the arteries	190	149	169		(2) Other pleurisy ..	145	97	124
	Embolism and thrombosis (not cerebral) ..	383	261	322	103	Congestion and hæmorrhagic infarct of lung ..	124	99	109
	Diseases of the veins (varices, hæmorrhoids, phlebitis, etc.)	152	86	111	104	Gangrene of the lung ..	375	125	292
					105	Asthma	19	13	16
					106	Pulmonary emphysema ..	216	71	185
	Diseases of the lymphatic system (lymphangitis, etc.)	216	167	192	107	Other diseases of the respiratory system.. ..	212	182	204
	Hæmorrhage without stated cause	429	333	385		(*a*) Chronic interstitial pneumonia ..	150	176	156
	Other diseases of the circulatory system ..	53	31	44		(*b*) Diseases of the mediastinum	667	—	571
						(*c*) Other diseases included under 107	404	208	346
	**V.—Diseases of the Respiratory System .. .. ..

Table LXIX.—England and Wales, 1928. Deaths from Causes confirmed b Post Mortem Examination or otherwise per 1,000 total Deaths ascribe to each Cause—*continued.*

Note.—A blank is left when no deaths were ascribed to the particular caus and in the "Persons" column when the deaths belonged to one sex onl

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International List No.	Causes of Death.	Males	Females	Persons
112	Other diseases of the stomach	103	59	79
	(1) Inflammation of the stomach	61	32	45
	(2) Other diseases included under 112 ..	328	306	318
113, 114	Diarrhœa and enteritis ..	106	102	104
	(1) Ulceration of the intestines	462	326	380
	(2) Colitis	160	102	129
	(3) Other diseases included under 113, 114..	90	86	88
115	Ankylostomiasis			
116	Diseases due to other intestinal parasites ..	333	77	200
	(*a*) Cestodes (hydatids of the liver excepted)	500	250	400
	(*b*) Trematodes	—		
	(*c*) Nematodes (other than ankylostoma) ..	200	—	111
	(*d*) Coccidia			
	(*e*) Other parasites ..			
	(*f*) Undefined parasites..		—	
117	Appendicitis and typhlitis	505	537	518
118	Hernia, intestinal obstruction	509	418	465
	(*a*) Hernia	517	399	459
	(*b*) Intestinal obstruction	503	434	470
119	Other diseases of the intestines	381	279	330
	(1) Intestinal stasis ..	149	97	119
	(2) Other diseases included under 119 ..	458	374	418
120	Acute yellow atrophy of the liver	273	352	329
121	Hydatid tumour of the liver	455	667	565
122	Cirrhosis of the liver ..	126	186	148
	(*a*) Returned as alcoholic	162	173	166
	(*b*) Not returned as alcoholic	118	188	144
123	Biliary calculi	519	425	451
124	Other diseases of the liver	379	296	326
125	Diseases of the pancreas ..	479	522	502
126	Peritonitis of unstated origin	500	442	458
127	Other diseases of the digestive system			
128–142	**VII. — Non - venereal Diseases of the Genito-urinary System ..**	**178**	**175**	**177**
128	Acute nephritis (including unspecified under 10 years of age)	113	75	95
129	Chronic nephritis (including unspecified over 10 years of age)	121	110	115
130	Chyluria	—	—	—
131	Other diseases of the kidneys and annexa ..	398	316	351
132	Calculi of the urinary passages	523	459	500
133	Diseases of the bladder ..	115	93	107
	(1) Cystitis	106	87	99
	(2) Other diseases of the bladder	333	300	324
134	Diseases of the urethra, urinary abscess, etc. ..	202	400	207
	(*a*) Stricture of the urethra	204		
	(*b*) Other diseases of the urethra, etc.	179	400	237
135	Diseases of the prostate ..	263		
136	Non-venereal diseases of the male genital organs	320		
137	Cysts and other tumours of the ovary not returned as malignant		469	
138	Salpingitis and pelvic abscess in females ..		561	
	(1) Salpingitis		584	
	(2) Pelvic abscess in females		350	
139	Tumours of the uterus not returned as malignant..		618	
140	Non-puerperal uterine hæmorrhage		692	

ble LXIX.—England and Wales, 1928. Deaths from Causes confirmed by Post Mortem Examination or otherwise per 1,000 total Deaths ascribed to each Cause—*continued.*

Note.—A blank is left when no deaths were ascribed to the particular cause d in the "Persons" column when the deaths belonged to one sex only. A — signifies that no operation, post mortem, or other examination was de in the case of the deaths so ascribed.

er-onal No.	Causes of Death.	Males	Females	Persons	International List No.	Causes of Death.	Males	Females	Persons
1	Other diseases of the female genital organs ..		525		154	Other diseases of the skin and its annexa ..	79	60	69
	(1) Other diseases of the uterus		515			(1) Ulcer, bedsore ..	80	29	47
	(2) Diseases of the other female genital organs not included in other headings ..		549			(2) Eczema	71	67	70
						(3) Pemphigus	57	52	55
						(4) Other diseases included under 154.. ..	95	92	94
2	Non-puerperal diseases of the breast	—	300	214					
150	**VIII.—The Puerperal State**		224		155–158	**X.—Diseases of the Bones and Organs of Locomotion .. ..**	**309**	**265**	**293**
3	Accidents of pregnancy..		375		155	Diseases of the bones ..	289	247	275
	(*a*) Abortion		338			(1) Acute infective osteomyelitis and periostitis	301	313	304
	(*b*) Ectopic gestation ..		581						
	(*c*) Other accidents ..		236						
4	Puerperal hæmorrhage ..		136			(2) Other diseases of the bones	252	147	205
5	Other accidents of childbirth		239		156	Diseases of the joints ..	385	313	356
6	Puerperal sepsis		259		157	Amputation			
7	Puerperal phlegmasia alba dolens, embolism, sudden death		128		158	Other diseases of the organs of locomotion ..	391	303	339
	(1) Puerperal phlegmasia alba dolens not returned as septic ..		32		159	**XI.—Congenital Malformations .. ..**	**218**	**168**	**196**
	(2) Puerperal embolism and sudden death..		144			(1) Congenital hydrocephalus	156	228	185
8	Puerperal albuminuria and convulsions		163			(2) Congenital malformation of heart ..	147	143	145
9	Childbirth not assignable to other headings (puerperal insanity)		190			(3) Other congenital malformations ..	273	180	231
0	Puerperal diseases of the breast		—		160–163	**XII.—Diseases of Early Infancy .. ..**	**65**	**67**	**66**
154	**IX.—Diseases of the Skin and Cellular Tissue* ..**	**95**	**68**	**83**	160	Congenital debility, sclerema and icterus ..	57	48	54
1	Gangrene	42	19	32		(1) Congenital debility and sclerema ..	50	42	47
	(1) Senile gangrene ..	38	16	28					
	(2) Other gangrene ..	83	53	70		(2) Icterus neonatorum..	102	88	97
2	Carbuncle, boil	98	132	109	161	Premature birth, injury at birth	45	47	46
3	Cellulitis, acute abscess ..	177	116	151					
	(1) Cellulitis	183	109	153		(1) Premature birth ..	33	35	34
	(2) Acute abscess ..	155	137	146		(2) Injury at birth ..	146	172	157

Table LXIX.—England and Wales, 1928. Deaths from Causes confirmed by Post Mortem Examination or otherwise per 1,000 total Deaths ascribed to each Cause—*continued.*

Note.—A blank is left when no deaths were ascribed to the particular cause, and in the "Persons" column when the deaths belonged to one sex only.

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International List No.	Causes of Death.	Males	Females	Persons
162	Other diseases peculiar to early infancy	150	161	155
	(1) Diseases of the umbilicus	220	184	203
	(2) Atelectasis	152	171	160
	(3) Other diseases included under 162 ..	120	116	118
163	Lack of care	796	703	752
164	**XIII.—Old Age .. ..**	**24**	**21**	**23**
	(1) Senile dementia ..	21	29	26
	(2) Other forms of senile decay	25	21	22
165–203	**XIV.—External Causes ..**	**241**	**244**	**242**
165–174	Suicide	193	237	206
165, 166	By solid or liquid poisons and corrosive substances	479	421	454
167	By poisonous gas ..	220	223	222
168	By hanging or strangulation	102	84	98
169	By drowning	179	177	178
170	By firearms	150	273	156
171	By cutting or piercing instruments	115	144	119
172	By jumping from high places	337	254	303
173	By crushing	116	194	129
174	By other means	429	529	512
175–196 201–203	Violent deaths excluding suicide and homicide.	254	239	250
175	Food poisoning	619	800	694
176	Poisoning by venomous animals	333	267	303
177	Other acute accidental poisonings	560	578	568
178	Conflagration	125	120	123
179	Accidental burns (conflagration excepted ..	98	73	84
180	Accidental mechanical suffocation	530	612	566
181	Accidental absorption of irrespirable or poisonous gas	440	464	451
182	Accidental drowning ..	199	275	213
	Accidental injury :—			
183	By firearms	135	429	160
184	By cutting or piercing instruments	737	500	645
185	By fall	292	187	239
186	In mining and quarrying	97		
187	By machinery	257	250	257
188	By other forms of crushing (vehicles, railways, etc.)	259	265	260
189	Injury by animals (poisoning excepted)	333	—	314
190	Wounds of war	368		
191	Execution of civilians by belligerent armies ..			
192	Hunger or thirst	429	556	478
193	Excessive cold	375	333	367
194	Excessive heat	250	182	230
195	Lightning	—		
196	Electricity (lightning excepted)	511	250	490
197–199	Homicide	430	593	515
197	By firearms	714	400	529
198	By cutting or piercing instruments	615	440	500
199	By other means ..	375	671	516
*201	Fracture (cause not specified)	556	—	500
202	Other and unstated forms of accidental violence, execution	490	667	536
203	Violent deaths of unknown causation	688	800	714

*200 Infanticide. Deaths from this cause are included under headings 197–199—Homicide.

Table LXIX.—England and Wales, 1928. Deaths from Causes confirmed by Post Mortem Examination or otherwise per 1,000 total Deaths ascribed to each Cause—*continued.*

Note.—A blank is left when no deaths were ascribed to the particular cause and in the "Persons" column when the deaths belonged to one sex only.

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International List No.	Causes of Death.	Males	Females	Persons	International List No.	Causes of Death.	Males	Females	Persons
204,205	**XV.—Ill-defined Diseases**	**105**	**76**	**93**		Cause of death unstated or ill-defined—*cont.*			
204	Sudden death	138	81	118		(1) Heart failure (1–70 years)	73	41	60
						(2) Other ill-defined causes	59	71	65
205	Cause of death unstated or ill-defined	93	74	85		(3) Cause not specified ..	400	438	415

INQUESTS AND UNCERTIFIED DEATHS* IN 1928.

The following table outlines the main changes which have occurred since 1881 in regard to the method of certification of causes of death.

Table LXX.—England and Wales : Certified and Uncertified Deaths and Inquest Cases, in 1881–1910 and in 1915, 1920, 1925 and 1928.

	Proportion per 100 Deaths.			
	Certified by :—			Uncertified Deaths.*
	Registered Medical Practitioners.	Coroners after Inquest.	Coroner after P.M.	
1881–85 ..	90·86	5·38	—	3·76
1886–90 ..	91·34	5·55	—	3·11
1891–95 ..	91·58	5·86	—	2·56
1896–1900 ..	91·76	6·25	—	1·99
1901–05 ..	91·56	6·73	—	1·71
1906–10 ..	91·54	7·03	—	1·43
1915	91·67	6·96	—	1·37
1920	92·14	6·65	—	1·21
1925	92·08	6·91	—	1·01
1928	90·82	6·78	1·41	0·99

In this table the quinquennial proportions entered have been condensed from those for single years previously published by simply averaging the rates, which change but little from year to year. That for uncertified deaths continues to fall slowly, the 0·99 per cent. now returned being the lowest in the table.

* Deaths without certificate of registered medical practitioner in attendance (which since 1914 must be referred by Registrar to Coroner), where Coroner declined to hold inquest.

TABLE LXXI.—England and Wales : Inquest Cases registered in 1928

International List Number.	Cause of Death.	Total.	Males (including non-civilians).	Females.	Non-Civilians.	Civilians			
						London.	County Boroughs.	Urban Districts.	Rural Districts.
	All Causes ..	31,220*	20,837	10,383	171	4,208	10,861	9,963	6,017
1—42	Infectious diseases	1,013	704	309	—	164	383	294	172
43—69	Other general diseases	746	439	307	1	106	301	223	115
70—86	Nervous diseases	1,180	693	487	3	163	483	329	202
87—96	Circulatory diseases	3,606	2,348	1,258	7	519	1,399	1,145	536
97—107	Respiratory diseases	1,052	672	380	—	205	454	287	106
108—127	Digestive diseases	741	470	271	3	122	264	217	135
128—142	Non-venereal diseases of the genito-urinary system—								
	Males	257	257	—	—	58	101	70	28
143—150	Females	183	—	183	—	35	79	50	19
151—154	The puerperal state	203	—	203	—	47	81	49	26
155—158	Diseases of the skin, etc.	132	97	35	—	20	61	29	22
159—163	Diseases of the bones, etc.	141	101	40	—	19	61	39	22
164	Malformations : infantile diseases ..	631	344	287	—	112	211	196	112
165—203	Old age	242	115	127	—	9	102	66	65
204, 205	Violence	20,834	14,437	6,397	157	2,623	6,781	6,894	4,379
	Ill-defined and unstated causes ..	259	160	99	—	6	100	75	78
7	Measles	22	10	12	—	10	7	4	1
9	Whooping cough	11	7	4	—	1	8	1	1
10	Diphtheria	16	10	6	—	3	8	2	3
11	Influenza	73	46	27	—	3	28	24	18
21	Erysipelas	34	20	14	—	7	14	8	5
23	Encephalitis lethargica	15	7	8	—	2	10	3	—
29	Tetanus	104	86	18	—	8	22	39	35
31	Phthisis	217	170	47	—	40	97	55	25
32—37	Other tuberculous diseases	111	75	36	—	26	43	33	9
38	Syphilis	44	31	13	—	12	16	14	2
41	Septicæmia	320	220	100	—	45	109	100	66
43—49	Cancer	373	233	140	—	69	140	110	54
57	Diabetes	65	33	32	—	5	24	24	12
62	Diseases of the thymus	68	37	31	1	13	19	20	15
66	Alcoholism	30	19	11	—	6	12	8	4
67 (1)	Occupational lead poisoning ..	42	36	6	—	2	36	2	2
70	Encephalitis	17	8	9	—	3	4	8	2
71	Meningitis	43	26	17	—	4	23	10	6
74	Cerebral hæmorrhage, etc.	581	330	251	2	91	253	147	88
78	Epilepsy	198	116	82	—	21	63	71	43
79, 80	Convulsions	147	93	54	1	9	61	41	35
84 (2)	Cerebral tumour	42	25	17	—	13	13	10	6
89	Angina pectoris	498	401	97	2	101	185	136	74
90 (1)—90 (4)	Valvular disease of heart	779	489	290	2	108	288	253	128
90 (5)	Fatty disease of heart	499	292	207	2	92	155	173	77
90 (7)	Other or unspecified myocardial disease	782	491	291	1	95	331	247	108
87, 88, 90 (6), 90 (8), 90 (9)	Other diseases of heart	295	178	117	—	20	95	112	68
91 (*a*)	Aneurysm	139	105	34	—	39	49	39	12
91 (*b*)	Arterio-sclerosis	520	341	179	—	56	265	147	52
92	Embolism and thrombosis (not cerebral)	40	27	13	—	4	9	19	8
99	Bronchitis	241	157	84	—	41	125	57	18
100	Broncho-pneumonia	251	134	117	—	58	101	69	23
101	Pneumonia	412	280	132	—	79	175	114	44
102	Pleurisy	48	32	16	—	12	11	19	6
103	Congestion and hæmorrhagic infarct of lung	34	18	16	—	8	11	9	6
108—109	Diseases of the buccal cavity, pharynx and tonsils	96	65	31	1	17	35	26	17
111	Ulcer of stomach or duodenum ..	113	91	22	—	14	39	42	18
112 (1)	Inflammation of the stomach ..	40	31	9	—	2	20	14	4
113 and 114	Diarrhœa and enteritis	121	67	54	—	15	53	30	23
117	Appendicitis	59	32	27	2	10	21	14	12
118	Hernia, intestinal obstruction ..	143	95	48	—	26	47	39	31
122	Cirrhosis of liver	42	25	17	—	19	8	10	5
129	Chronic nephritis	315	184	131	—	74	130	81	30
153 (1)	Cellulitis	84	71	13	—	11	39	21	13
155 (1)	Acute osteomyelitis	116	86	30	—	15	53	32	16
159	Congenital malformations	83	50	33	—	17	30	24	12
160 (1)	Congenital debility and sclerema ..	53	32	21	—	5	19	13	16
161 (1)	Premature birth	110	67	43	—	14	43	38	15
161 (2)	Injury at birth	83	36	47	—	14	29	23	17
162 (2)	Atelectasis	53	30	23	—	7	22	21	3
163	Lack of care	231	120	111	—	52	62	71	46
165—174	Suicide	4,882	3,409	1,473	25	590	1,704	1,629	934
175—203	Other violence	15,952	11,028	4,924	132	2,033	5,077	5,265	3,445
204—205 (2)	Ill-defined causes	220	135	85	—	4	87	61	68
205 (3)	Cause not specified	39	25	14	—	2	13	14	10

* Including 146 inquests adjourned and not resumed

classified by Sex, Age, Class of Area, and assigned Cause of Death.

Ages.										International List Number.
0–	1–	5–	15–	25–	35–	45–	55–	65–	75 and Upwards.	
1,745	1,656	2,060	3,023	2,677	3,181	4,356	4,971	4,362	3,189	All Causes.
47	65	113	111	115	124	168	136	89	45	1—42
49	27	32	41	39	58	127	183	143	47	43—69
132	39	53	76	72	117	164	210	217	100	70—86
2	5	16	57	85	250	572	981	1,069	569	87—96
172	83	81	38	40	83	139	154	163	99	97—107
52	79	69	44	60	82	109	119	99	28	108—127
										128—142
5	4	2	10	8	27	47	64	63	27	
1	1	3	16	21	24	26	36	32	23	
—	—	1	28	98	73	3	—	—	—	143—150
10	6	12	10	9	11	21	18	29	6	151—154
—	20	71	26	2	5	5	8	4	—	155—158
608	10	4	5	3	—	—	—	1	—	159—163
—	—	—	—	—	—	—	3	83	156	164
642	1,311	1,598	2,553	2,118	2,299	2,942	2,979	2,310	2,082	165—203
25	6	5	8	7	28	33	80	60	7	204, 205
6	14	2	—	—	—	—	—	—	—	7
7	4	—	—	—	—	—	—	—	—	9
1	10	4	—	—	—	—	1	—	—	10
4	—	8	8	8	7	10	14	8	6	11
1	—	1	—	5	6	5	7	3	6	21
—	3	—	2	2	4	3	1	—	—	23
1	3	28	25	14	7	10	8	6	2	29
1	4	8	21	31	43	46	36	22	5	31
8	17	23	27	15	4	11	4	1	1	32—37
5	—	—	2	6	8	13	7	2	1	38
8	5	27	22	30	37	64	57	46	24	41
2	—	2	10	13	27	71	114	100	34	43—49
—	—	1	2	5	4	6	20	21	6	57
32	7	15	8	4	—	1	1	—	—	62
—	—	—	—	4	4	9	9	3	1	66
—	—	—	3	1	7	13	16	2	—	67 (1)
—	1	4	4	3	2	2	1	—	—	70
7	3	11	5	2	8	2	3	1	1	71
1	—	1	11	18	37	104	151	174	84	74
—	—	14	42	36	40	19	24	18	5	78
120	20	4	2	—	—	—	1	—	—	79, 80
1	2	7	5	4	3	11	6	1	2	84 (2)
—	—	—	—	5	33	98	164	145	53	89
—	—	5	25	36	79	141	202	210	81	90 (1)—90 (4)
—	—	1	6	11	30	78	148	166	59	90 (5)
—	1	1	7	4	33	85	176	276	199	90 (7)
1	2	5	14	14	37	51	74	63	34	87, 88, 90(6),90(8), 90 (9)
—	—	2	—	4	10	32	49	25	17	91 (*a*)
—	—	—	—	8	24	62	134	173	119	91 (*b*)
—	1	—	2	1	2	13	14	4	3	92
19	8	2	1	3	13	26	43	72	54	99
107	44	20	5	1	6	17	17	21	13	100
33	20	49	21	26	53	71	68	51	20	101
2	9	7	3	2	3	11	5	5	1	102
7	1	—	1	2	1	4	4	7	7	103
3	16	27	7	13	10	7	11	2	—	108—109
—	—	1	6	5	22	31	25	19	4	111
9	4	4	2	1	5	3	6	4	2	112 (1)
34	25	16	5	9	9	7	6	9	1	113 and 114
1	6	12	9	9	8	5	5	4	—	117
15	10	6	10	3	11	24	25	27	12	118
—	—	—	1	1	4	8	15	10	3	122
—	—	2	19	12	31	56	76	76	43	129
2	1	8	6	6	9	19	12	17	4	153 (1)
—	19	69	21	—	1	2	3	1	—	155 (1)
61	9	4	5	3	—	—	—	1	—	159
53	—	—	—	—	—	—	—	—	—	160 (1)
110	—	—	—	—	—	—	—	—	—	161 (1)
82	1	—	—	—	—	—	—	—	—	161 (2)
53	—	—	—	—	—	—	—	—	—	162 (2)
231	—	—	—	—	—	—	—	—	—	163
—	—	4	346	535	829	1,225	1,156	598	189	165—174
642	1,311	1,594	2,207	1,583	1,470	1,717	1,823	1,712	1,893	175—203
7	6	4	7	4	23	30	74	59	6	204—205(2)
18	—	1	1	3	5	3	6	1	1	205 (3)

under Section 20 of the Coroners' (Amendment) Act, 1926.

TABLE LXXII.—England and Wales : Uncertified Deaths registered

International List Number.	Cause of Death.	Total.	Males (including non-civilians).	Females.	Non-Civilians.	Civilians.			
						London.	County Boroughs.	Urban District.	Rural Districts.
	All Causes	4,578	2,494	2,084	1	43	1,304	1,792	1,438
1—42	Infectious diseases	133	73	60	—	3	37	56	37
43—69	Other general diseases	140	58	82	—	1	37	60	42
70—86	Nervous diseases	638	351	287	—	2	185	253	198
87—96	Circulatory diseases	1,520	881	639	—	26	458	579	457
97—107	Respiratory diseases	414	213	201	—	4	151	143	116
108—127	Digestive diseases	138	71	67	—	—	47	52	39
128—142	Non-venereal diseases of the genito-urinary system—								
	Males	29	29	—	—	—	6	13	10
	Females	24	—	24	—	—	9	9	6
143—150	The puerperal state	15	—	15	—	—	4	9	2
151—154	Diseases of the skin, etc.	9	6	3	—	—	5	3	1
155—158	Diseases of the bones, etc.	3	2	1	—	—	1	—	2
159—163	Malformations : infantile diseases ..	402	228	174	—	4	142	141	115
164	Old age	652	312	340	—	2	129	262	259
165—203	Violence	31	14	17	—	—	8	12	11
204, 205	Ill-defined and unstated causes ..	430	256	174	1	1	85	200	143
7	Measles	8	5	3	—	—	3	2	3
9	Whooping cough	7	2	5	—	—	3	3	1
10	Diphtheria	10	9	1	—	—	4	3	3
11	Influenza	30	15	15	—	—	5	15	10
31	Phthisis	56	33	23	—	3	17	23	13
32—37	Other tuberculous diseases	9	2	7	—	—	2	5	2
43—49	Cancer	55	23	32	—	—	19	16	20
57	Diabetes	25	10	15	—	—	8	11	6
60	Diseases of the thyroid gland ..	15	3	12	—	—	4	8	3
71	Meningitis	8	4	4	—	—	3	4	1
74 (*a*) 1	Cerebral hæmorrhage	279	145	134	—	—	81	113	85
74 (*a*) 2	Apoplexy (lesion unstated)	61	38	23	—	—	6	31	24
75	Paralysis of unstated origin ..	14	6	8	—	—	2	5	7
78	Epilepsy	51	25	26	—	—	18	17	16
79 and 80	Convulsions	188	114	74	—	1	62	71	54
89	Angina pectoris	183	138	45	—	3	61	71	48
90(1) —90 (4)	Valvular disease of heart	296	169	127	—	9	102	109	76
90 (5)	Fatty heart	101	42	59	—	—	38	35	28
90 (7)	Other or unspecified myocardial disease	358	217	141	—	4	141	127	86
87, 88, 90(6), 90(8), 90(9)	Other heart disease	430	214	216	—	8	70	174	178
91 (*b*)	Arterio-sclerosis	115	79	36	—	2	38	43	32
92	Embolism and thrombosis	11	3	8	—	—	2	6	3
99	Bronchitis	268	132	136	—	2	106	89	71
100	Broncho-pneumonia	41	21	20	—	1	14	10	16
101 (*b*)	Pneumonia (not otherwise defined) ..	53	31	22	—	—	18	23	12
105	Asthma	24	14	10	—	1	7	6	10
112 (1)	Inflammation of stomach	22	9	13	—	—	6	11	5
111(*a*)and 112(2)	Other diseases of stomach	26	18	8	—	—	9	8	9
113 and 114	Diarrhœa and enteritis	48	23	25	—	—	18	17	13
118	Hernia and intestinal obstruction ..	16	8	8	—	—	7	5	4
129	Chronic nephritis	43	23	20	—	—	9	20	14
159	Congenital malformations	37	19	18	—	—	12	15	10
160	Congenital debility, sclerema, etc. ..	88	45	43	—	—	31	29	28
161 (1)	Premature birth	219	134	85	—	4	79	79	57
161 (2)	Injury at birth	16	9	7	—	—	5	7	4
163	Lack of care	9	6	3	—	—	5	—	4
182	Accidental drowning	4	3	1	—	—	3	—	1
204	Sudden death (1—70)	109	68	41	—	—	18	62	29
205 (1)	Heart failure (1—70)	290	171	119	1	—	65	125	99
205 (2)	Other ill-defined causes	30	17	13	—	1	2	12	15
205 (3)	Cause not specified	1	—	1	—	—	—	1	—

in 1928 classified by Sex, Age, Class of Area, and assigned Cause of Death.

Ages.										International List Number.
0–	1–	5–	15–	25–	35–	45–	55–	65–	75 and Upwards.	
693	100	96	55	74	165	405	753	1,162	1,075	All Causes.
14	19	15	18	10	13	17	9	11	7	1—42
6	3	5	1	4	9	17	41	36	18	43—69
163	31	18	7	11	18	50	101	134	105	70—86
1	2	7	9	24	63	195	362	512	345	87—96
70	32	23	5	3	10	21	49	108	93	97—107
32	10	17	1	1	4	16	17	24	16	108—127
										128—142
1	1	—	—	1	1	2	6	9	8	
—	—	—	—	—	5	4	4	6	5	
—	—	—	2	7	6	—	—	—	—	143—150
—	—	—	—	—	2	1	1	3	2	151—154
—	—	1	—	—	1	1	—	—	—	155—158
397	1	2	2	—	—	—	—	—	—	159—163
—	—	—	—	—	—	—	3	190	459	164
5	—	2	1	—	1	2	6	4	10	165—203
4	1	6	9	13	32	79	154	125	7	204—205
3	5	—	—	—	—	—	—	—	—	7
4	3	—	—	—	—	—	—	—	—	9
—	6	4	—	—	—	—	—	—	—	10
2	1	5	1	1	4	5	2	5	4	11
2	—	1	17	9	9	10	6	2	—	31
—	3	3	—	—	—	—	—	3	—	32—37
—	—	—	—	1	5	6	17	15	11	43—49
—	—	—	—	—	1	2	11	10	1	57
—	—	1	1	1	1	5	4	2	—	60
2	1	5	—	—	—	—	—	—	—	71
—	—	1	1	—	3	31	74	91	78	74 (*a*) 1
—	—	—	—	—	1	7	11	25	17	74 (*a*) 2
—	1	1	—	—	—	—	—	9	3	75
—	3	5	6	7	9	8	9	3	1	78
159	24	4	—	1	—	—	—	—	—	79 and 80
—	—	—	—	—	10	33	56	57	27	89
—	1	4	4	15	20	47	71	86	48	90(1)—90(4)
—	—	—	—	—	5	13	36	32	15	90 (5)
—	—	—	1	3	1	32	68	131	122	90 (7)
—	1	3	4	3	22	58	107	152	80	87, 88, 90(6), 90(8), 90(9)
—	—	—	—	—	2	3	16	46	48	91 (*b*)
—	—	—	—	3	1	3	2	2	—	92
33	14	2	1	1	8	11	30	88	80	99
19	9	4	1	1	—	—	2	4	1	100
14	9	12	2	—	—	3	4	4	5	101 (*b*)
—	—	—	—	—	—	3	9	9	3	105
2	2	2	—	—	—	3	3	8	2	112 (1)
1	—	2	—	—	1	4	7	5	6	111 (*a*) and 112 (2)
23	7	10	—	1	—	1	1	2	3	113 and 114
5	—	—	—	—	—	2	2	4	3	118
—	—	—	—	1	4	6	9	12	11	129
32	1	2	2	—	—	—	—	—	—	159
88	—	—	—	—	—	—	—	—	—	160
219	—	—	—	—	—	—	—	—	—	161 (1)
16	—	—	—	—	—	—	—	—	—	161 (2)
9	—	—	—	—	—	—	—	—	—	163
—	—	1	1	—	—	1	1	—	—	182
—	—	2	1	2	9	22	41	32	—	204
—	—	3	8	10	21	55	105	88	—	205 (1)
4	1	1	—	1	1	2	8	5	7	205 (2)
—	—	—	—	—	1	—	—	—	—	205 (3)

TABLE LXXIII.—England and Wales: Deaths certified by Coroner after Post Cause of

International List Number.	Cause of Death.	Total.	Males (including non-civilians).	Females.	Non-Civilians.	Civilians.			
						London.	County Boroughs	Urban Districts.	Rural Districts.
	All Causes	6,496	3,829	2,667	9	2,031	1,996	1,663	797
1—42	Infectious diseases	315	201	114	2	104	115	73	21
43—69	Other general diseases	281	164	117	1	87	67	81	45
70—86	Nervous diseases	587	281	306	1	183	173	160	70
87—96	Circulatory diseases	3,330	2,076	1254	2	1,084	968	866	410
97—107	Respiratory diseases	915	526	389	1	258	354	202	100
108—127	Digestive diseases	363	214	149	2	104	101	103	53
128—142	Non-venereal diseases of the genito-urinary system—								
	Males	168	168	—	—	59	60	33	16
	Females	129	—	129	—	52	36	29	12
143—150	The puerperal state	70	—	70	—	21	22	20	7
151—154	Diseases of the skin, etc.	10	5	5	—	5	3	2	—
155—158	Diseases of the bones, etc.	11	6	5	—	2	3	4	2
159—163	Malformations: infantile diseases..	247	150	97	—	67	83	61	36
164	Old age	25	11	14	—	1	8	8	8
165—203	Violence	26	13	13	—	2	3	11	10
204, 205	Ill-defined and unstated causes ..	19	14	5	—	2	—	10	7
7	Measles	11	6	5	—	6	2	2	1
9	Whooping cough	1	—	1	—	1	—	—	—
10	Diphtheria	18	8	10	—	9	5	3	1
11	Influenza	20	11	9	1	1	5	12	1
31	Phthisis	182	121	61	1	71	65	33	12
32—37	Other tuberculous diseases	30	19	11	—	3	17	8	2
38	Syphilis	33	26	7	—	9	15	8	1
43—49	Cancer (all forms)	155	94	61	1	64	30	35	25
57	Diabetes	11	3	8	—	6	1	2	2
62	Diseases of the thymus	59	45	14	—	5	19	25	10
71	Meningitis	35	24	11	—	9	10	13	3
74	Cerebral hæmorrhage, apoplexy, etc.	369	153	216	—	133	99	98	39
78	Epilepsy	49	27	22	—	10	10	16	13
79 and 80	Convulsions	55	34	21	—	6	28	12	9
84 (2)	Cerebral tumour	27	14	13	—	12	5	8	2
87	Pericarditis	47	21	26	—	8	18	15	6
88	Acute endocarditis and myocarditis	34	20	14	—	9	13	9	3
89	Angina pectoris	632	475	157	1	284	163	130	54
90 (1—4)	Valvular disease of heart	763	462	301	—	231	214	208	110
90 (5)	Fatty heart	622	335	287	—	166	182	182	92
90 (6)	Cardiac dilatation	23	20	3	—	4	6	10	3
90 (7)	Other or unspecified myocardial disease	486	274	212	1	177	147	102	59
90 (9)	Heart disease undefined	106	67	39	—	13	25	38	30
91 (*a*)	Aneurysm	243	169	74	—	91	80	56	16
91 (*b*)1	Arterio sclerosis with record of cerebral vascular lesion	115	62	53	—	46	38	20	11
91 (*b*)2	Arterio sclerosis without record of cerebral vascular lesion	200	133	67	—	43	75	67	15
92	Embolism and thrombosis	35	21	14	—	2	7	20	6
99	Bronchitis	114	63	51	—	53	30	21	10
100, 101	Pneumonia (all forms)	698	396	302	—	183	291	152	72
102	Pleurisy	28	20	8	—	5	10	8	5
103	Congestion and hæmorrhagic infarct of lung	52	33	19	1	9	20	14	8
109	Diseases of pharynx and tonsils ..	22	13	9	—	9	4	7	2
111	Ulcer of stomach or duodenum ..	80	50	30	—	32	16	21	11
113, 114	Diarrhœa and enteritis	46	29	17	—	13	19	11	3
117	Appendicitis and typhlitis	24	14	10	1	4	11	5	3
118	Hernia and intestinal obstruction ..	74	41	33	1	25	19	20	9
122	Cirrhosis of liver	21	11	10	—	7	5	4	5
125	Diseases of the pancreas	29	19	10	—	4	10	8	7
129	Chronic nephritis	243	134	109	—	94	77	47	25
131	Other diseases of the kidneys and annexa	26	14	12	—	14	7	5	—
159	Congenital malformations	96	58	38	—	24	19	33	20
161 (1)	Premature birth	45	31	14	—	14	17	7	7
161 (2)	Injury at birth	21	13	8	—	7	8	5	1
162 (2)	Atelectasis	59	31	28	—	16	29	10	4

Mortem registered in 1928, classified by Sex, Age, Class of Area, and assigned Death.

Ages.										International List Number.
0–	1–	5–	15–	25–	35–	45–	55–	65–	75 and Upwards.	
656	154	173	165	287	463	926	1,376	1,473	823	All Causes.
15	31	27	23	35	38	65	47	24	10	1—42
49	16	9	8	7	15	32	53	59	33	43—69
68	11	16	20	47	55	116	126	97	31	70—86
6	3	18	32	80	198	508	887	1,015	583	87—96
236	73	60	34	40	58	84	126	124	80	97—107
40	9	28	16	25	39	59	64	60	23	108—127
1	1	—	6	7	19	26	37	51	20	128—142
1	1	1	5	5	14	31	24	29	18	
—	—	—	12	34	22	2	—	—	—	143—150
1	1	—	—	3	2	—	1	1	1	151—154
—	3	5	2	—	—	1	—	—	—	155—158
229	3	7	4	2	1	1	—	—	—	159—163
—	—	—	—	—	—	—	—	6	19	164
10	1	1	2	1	1	—	3	3	4	165—203
—	1	1	1	1	1	1	8	4	1	204,205
2	9	—	—	—	—	—	—	—	—	7
—	1	—	—	—	—	—	—	—	—	9
—	8	8	—	1	—	—	1	—	—	10
1	—	1	2	3	1	5	3	4	—	11
2	1	10	16	23	29	44	34	16	7	31
7	7	3	3	2	3	2	—	1	2	32—37
3	1	1	1	1	—	13	9	3	1	38
—	1	—	1	3	9	21	42	48	30	43—49
—	—	—	1	1	1	—	4	4	—	57
40	9	5	3	1	1	—	—	—	—	62
9	4	8	5	1	3	—	4	1	—	71
—	—	—	5	19	35	85	109	89	27	74
2	1	2	4	15	5	11	4	4	1	78
50	4	1	—	—	—	—	—	—	—	79 and 80
1	—	—	3	6	5	5	4	1	2	84 (2)
5	1	1	—	3	3	3	11	15	5	87
—	2	5	7	11	7	—	2	—	—	88
—	—	—	—	8	20	107	187	214	96	89
—	—	5	16	30	61	104	192	223	132	90 (1—4)
—	—	—	3	3	25	99	169	207	116	90 (5)
—	—	—	—	2	2	2	7	9	1	90 (6)
—	—	1	2	8	26	69	120	149	111	90 (7)
—	—	4	1	3	9	20	23	30	16	90 (9)
—	—	1	1	12	23	48	67	55	36	91 (*a*)
—	—	—	1	—	10	21	35	33	15	91 (*b*) 1
—	—	—	—	—	9	24	52	70	45	91 (*b*) 2
1	—	1	1	—	2	7	14	4	5	92
28	3	2	1	5	2	7	20	19	27	99
195	61	56	28	31	47	69	92	84	35	100, 101
2	2	1	2	1	3	3	4	7	3	102
11	3	1	3	1	2	3	8	8	12	103
3	1	4	3	3	1	5	2	—	—	109
—	—	1	1	4	11	25	17	19	2	111
24	3	4	2	1	1	—	3	5	3	113, 114
—	1	6	3	4	4	1	3	1	1	117
7	2	8	3	5	4	12	12	13	8	118
1	—	—	—	—	2	6	5	4	3	122
1	—	2	1	3	4	3	4	9	2	125
—	—	1	6	9	21	51	51	68	36	129
1	2	—	3	1	5	2	5	6	1	131
78	3	7	4	2	1	1	—	—	—	159
45	—	—	—	—	—	—	—	—	—	161 (1)
21	—	—	—	—	—	—	—	—	—	161 (2)
59	—	—	—	—	—	—	—	—	—	162 (2)

The facts recorded as to the 31,220 deaths on which inquests were held are summarized in Table LXXI, while in Table LXXII similar facts are recorded for uncertified deaths, and in Table LXXIII for deaths certified by coroners after *post mortem* examination but without inquest, in accordance with the Coroners (Amendment) Act, 1926.

The number of the latter, 6,496, represents 21 per cent. of the inquests held during the year, so the newly authorized procedure is being largely resorted to.

Table LXXIV.—England and Wales, 1928 : Method of Certification. —Cases per Thousand Deaths registered from the Same Cause.

International List Number.	Cause of Death.	By Registered Medical Practitioners.	By Coroners.		Uncertified.	Total.
			After Inquest.	After P.M. without Inquest.		
	All Causes	908	68*	14	10	1,000
1—42	Infectious diseases	976	17	5	2	1,000
43—69	Other general diseases	984	10	4	2	1,000
70—86	Nervous diseases	943	28	14	15	1,000
87—96	Circulatory diseases	920	34	32	14	1,000
97—107	Respiratory diseases	960	18	15	7	1,000
108—127	Digestive diseases	953	28	14	5	1,000
128—142	Non-venereal diseases of the genito-urinary system—					
	Males	965	20	13	2	1,000
	Females	964	19	14	3	1,000
143—150	The puerperal state	901	70	24	5	1,000
151—154	Diseases of the skin, etc.	950	44	3	3	1,000
155—158	Diseases of the bones, etc.	834	151	12	3	1,000
159—163	Malformations, infantile diseases ..	939	30	12	19	1,000
164	Old age	954	12	1	33	1,000
165—203	Violence	20	978	1	1	1,000
204, 205	Ill-defined and unstated causes ..	154	309	23	514	1,000
7	Measles	990	5	3	2	1,000
9	Whooping cough	994	4	0	2	1,000
10	Diphtheria	986	5	6	3	1,000
11	Influenza	984	9	3	4	1,000
21	Erysipelas	959	38	1	2	1,000
23	Encephalitis lethargica	980	14	5	1	1,000
29	Tetanus	224	776	—	—	1,000
31	Phthisis	985	7	6	2	1,000
32—37	Other tuberculous diseases	979	16	4	1	1,000
38	Syphilis	947	29	22	2	1,000
41	Septicæmia	522	462	10	6	1,000
43—49	Cancer	989	7	3	1	1,000
57	Diabetes	980	13	2	5	1,000
60	Diseases of the thyroid gland	960	23	7	10	1,000
62	Diseases of the thymus	231	393	341	35	1,000
66	Alcoholism	684	278	19	19	1,000
67 (1)	Occupational lead poisoning	288	712	—	—	1,000
70	Encephalitis	890	60	43	7	1,000
71	Meningitis	928	36	29	7	1,000
74	Cerebral hæmorrhage, etc.	945	24	16	15	1,000
74 (*a*) 1	"Cerebral hæmorrhage" so returned	940	26	19	15	1,000
74 (*a*) 2	Apoplexy (lesion unstated)	918	40	3	39	1,000
75	Paralysis of unstated origin	987	3	1	9	1,000
78	Epilepsy	867	88	22	23	1,000
79, 80	Convulsions	796	77	29	98	1,000
84 (2)	Cerebral tumour	942	34	22	2	1,000
87	Pericarditis	705	128	167	—	1,000
88	Acute endocarditis and myocarditis ..	963	15	18	4	1,000
89	Angina pectoris	644	135	171	50	1,000
90(1)—90(4)	Valvular disease of heart	932	29	28	11	1,000
90 (5)	Fatty disease of heart	578	172	215	35	1,000
90 (6)	Cardiac dilatation	854	70	46	30	1,000
90 (7)	Other or unspecified myocardial disease	949	25	15	11	1,000
90 (9)	Heart disease undefined	902	26	15	57	1,000

* Including inquests adjourned and not resumed. *See* Note to Table LXXI.

Table LXXIV.—England and Wales, 1928 : Method of Certification. —Cases per Thousand Deaths registered from the Same Cause.—*continued.*

International List Number.	Cause of Death.	By Registered Medical Practitioners.	By Coroners.		Uncertified.	Total.
			After Inquest.	After P.M. without Inquest.		
87, 88, 90(6), 90(8), 90 (9)	Other diseases of heart	920	25	18	37	1,000
91 (*a*)	Aneurysm	682	113	198	7	1,000
91 (*b*)	Arterio-sclerosis	964	20	12	4	1,000
91 (*b*) 1	Arterio-sclerosis with record of cerebral vascular lesion	973	13	11	3	1,000
91 (*b*) 2	Arterio-sclerosis without record of cerebral vascular lesion	956	25	13	6	1,000
92	Embolism and thrombosis	764	110	96	30	1,000
99	Bronchitis	974	10	5	11	1,000
100, 101	Pneumonia, all forms	953	21	23	3	1,000
100	Broncho-pneumonia	965	16	16	3	1,000
101	Pneumonia	940	27	29	4	1,000
101 (*b*)	Pneumonia, not otherwise defined	924	35	30	11	1,000
102	Pleurisy	931	43	25	1	1,000
103	Congestion and hæmorrhagic infarct of lung	908	33	50	9	1,000
105	Asthma	982	4	1	13	1,000
108—109	Diseases of the buccal cavity, pharynx and tonsils	927	56	15	2	1,000
109	Diseases of the pharynx and tonsils	925	51	22	2	1,000
111	Ulcer of stomach or duodenum	946	30	21	3	1,000
112 (1)	Inflammation of the stomach	944	29	11	16	1,000
111 (*a*), 112 (2)	Other diseases of stomach	926	42	23	9	1,000
113 and 114	Diarrhœa and enteritis	967	19	7	7	1,000
117	Appendicitis	971	21	8	0	1,000
118	Hernia, intestinal obstruction	946	33	17	4	1,000
122	Cirrhosis of liver	965	22	11	2	1,000
125	Diseases of the pancreas	886	45	69	—	1,000
129	Chronic nephritis	956	23	18	3	1,000
131	Other diseases of the kidneys and annexa	936	31	33	—	1,000
153 (1)	Cellulitis	849	146	5	—	1,000
155 (1)	Acute osteomyelitis	749	229	20	2	1,000
159	Congenital malformations	942	22	26	10	1,000
160	Congenital debility, sclerema, etc.	946	20	4	30	1,000
160 (1)	Congenital debility and sclerema	943	21	4	32	1,000
161 (1)	Premature birth	968	9	4	19	1,000
161 (2)	Injury at birth	904	66	17	13	1,000
162 (2)	Atelectasis	863	51	56	30	1,000
163	Lack of care	12	924	28	36	1,000
165—174	Suicide	—	1,000	—	—	1,000
182	Accidental drowning	—	998	—	2	1,000
175—203	Other violence	25	971	2	2	1,000
204	Sudden death (1—70)	66	392	28	514	1,000
204—205 (2)	Ill-defined causes	162	276	23	539	1,000
205 (1)	Heart failure (1—70)	48	231	22	699	1,000
205 (2)	Other ill-defined causes	561	243	18	178	1,000
205 (3)	Cause not specified	—	952	24	24	1,000

Table LXXIV records, for the causes dealt with, the proportion per thousand total deaths registered in 1928 for which the cause was assigned by each of the three procedures now authorized—by medical certificate, certificate by Coroner after inquest, and certificate by Coroner after *post mortem* examination without inquest—and of uncertified deaths. The latter amounted only to 1 per cent. of the total, and the influence upon the numbers of deaths under various causes of these more or less speculative assignments can be gathered from Table LXXIV. This shows heart failure (List No. 205·1) as owing more to this source than any other causal heading, almost 70 per cent. of deaths so classified being uncertified. Next to this come sudden and other ill-defined deaths (539 per 1,000), convulsions (98), angina pectoris (50), and "heart disease" (57). In so far as assignments to any cause are derived from this source they must be regarded with some suspicion, and it may be noted that assignments to thymus disease, apoplexy, and congenital debility, in addition to those noted above, are largely of this nature.

Table LXXIV also indicates for which causes of death coroners chiefly dispensed with inquiry by inquest in 1928, using the power conferred by the new Act to issue a certificate after autopsy alone. It will be seen that inquiry by inquest into violent deaths remains the rule, all suicides having been so dealt with, and over 97 per cent. of accidental deaths (175–203). Inquiry by inquest is the rule also for deaths from the following causes, tetanus, septicæmia, thymus disease, alcoholism, acute osteomyelitis and occupational lead poisoning. But inquest was dispensed with for the majority of deaths referred to the coroner from diphtheria, pericarditis, angina pectoris and certain other forms of heart disease, aneurysm, pneumonia, diseases of the pancreas, and congenital malformations. Evidently in these cases the autopsy revealed an obvious cause of death, and so rendered inquest unnecessary.

The details contained in Tables LXXI–LXXIII and LXXV–LXXVIII regarding uncertified deaths and those certified by coroners in the two ways now open to them are inserted in order, as on previous occasions, to place on record for those specially interested the fullest available details regarding these deaths. These tables, accordingly, call for no special comment.

Table LXXV.—England and Wales, 1928: Inquest Cases per Thousand Deaths registered from the Same Cause.

International List Number.	Cause of Death.	Total.	Males (including non-civilians).	Females.	Non-Civilians.	Civilians.			
						London.	County Boroughs.	Urban Districts.	Rural Districts.
	All Causes	68*	88	46	401	78	67	65	66
1—42	Infectious diseases	17	21	11	—	20	16	15	17
43—69	Other general diseases	10	13	8	26	12	12	9	8
70—86	Nervous diseases	28	34	22	130	42	34	22	23
87—96	Circulatory diseases	34	46	23	269	40	39	33	25
97—107	Respiratory diseases	18	20	14	—	27	19	15	11
108—127	Digestive diseases	28	33	22	86	37	27	25	27
128—142	Non-venereal diseases of the genito-urinary system—								
	Males	20	20	—	—	37	24	17	10
	Females	19	—	19	—	31	24	15	11
143—150	The puerperal state	70	—	70	—	181	79	47	44
151—154	Diseases of the skin, etc.	44	57	26	—	61	60	29	33
155—158	Diseases of the bones, etc. ..	151	169	119	—	153	186	139	112
159—163	Malformations: infantile diseases ..	30	28	32	—	58	27	28	26
164	Old age	12	14	11	—	6	18	9	12
165—203	Violence	978	984	964	1,000	988	984	974	966
204, 205	Ill-defined and unstated causes ..	309	324	289	—	400	450	219	303
7	Measles	5	4	6	—	7	5	4	2
9	Whooping cough	4	5	2	—	2	6	1	2
10	Diphtheria	5	6	4	—	8	7	2	6
11	Influenza	9	11	7	—	5	11	8	10
21	Erysipelas	38	42	34	—	63	40	28	33
23	Encephalitis lethargica	14	14	14	—	39	25	7	—
29	Tetanus	776	804	667	—	1,000	880	812	660
31	Phthisis	7	10	4	—	10	8	6	5
32—37	Other tuberculous diseases ..	16	21	11	—	41	17	14	7
38	Syphilis	29	31	24	—	53	24	31	11
41	Septicæmia	462	543	348	—	495	472	457	440
43—49	Cancer	7	9	5	—	10	7	6	5
57	Diabetes	13	15	11	—	10	14	13	10
62	Diseases of the thymus	393	343	477	1,000	565	352	351	395
66	Alcoholism	278	257	324	—	429	353	222	167
67 (1)	Occupational lead poisoning ..	712	679	1,000	—	500	923	167	500
70	Encephalitis	60	53	69	—	81	51	71	40
71	Meningitis	36	39	31	—	35	51	24	27
74	Cerebral hæmorrhage, etc.	24	32	19	500	43	32	17	16
78	Epilepsy	88	102	73	—	109	84	89	83
79, 80	Convulsions	77	82	70	1,000	98	85	60	86
84 (2)	Cerebral tumour	34	39	29	—	81	35	23	24
89	Angina pectoris	135	155	88	500	157	153	111	122
90 (1)–90 (4)	Valvular disease of heart	29	41	19	667	39	32	27	22
90 (5)	Fatty disease of heart	172	238	124	667	202	181	170	136
90 (7)	Other or unspecified myocardial disease.	25	33	17	250	20	30	25	18
87, 88, 90(6), 90(8), 90 (9)	Other diseases of heart	25	34	18	—	17	28	27	23
91 (*a*)	Aneurysm	113	111	121	—	151	110	107	76
91 (*b*)	Arterio-sclerosis	20	24	15	—	21	29	17	10
92	Embolism and thrombosis ..	110	148	72	—	95	85	136	111
99	Bronchitis	10	13	7	—	16	14	7	4
100	Broncho-pneumonia	16	16	17	—	25	15	15	11
101	Pneumonia	27	29	23	—	43	28	23	18
102	Pleurisy	43	47	36	—	77	28	53	29
103	Congestion and hæmorrhagic infarct of lung.	33	41	26	—	39	37	27	29
108—109	Diseases of the buccal cavity, pharynx and tonsils.	56	75	36	250	104	62	43	44
111	Ulcer of stomach or duodenum ..	30	32	22	—	25	31	32	26
112 (1)	Inflammation of the stomach ..	29	50	12	—	27	39	27	14
113 and 114	Diarrhoea and enteritis	19	19	18	—	17	18	17	26
117	Appendicitis	21	20	22	133	34	23	14	19
118	Hernia, intestinal obstruction ..	33	42	23	—	49	32	27	33
122	Cirrhosis of liver	22	21	25	—	64	14	15	15
129	Chronic nephritis	23	27	19	—	44	27	18	11
153 (1)	Cellulitis	146	209	55	—	159	183	115	116
155 (1)	Acute osteomyelitis	229	238	208	—	254	273	215	155
159	Congenital malformations	22	24	20	—	49	23	19	15
160 (1)	Congenital debility and sclerema ..	21	20	21	—	23	21	14	30
161 (1)	Premature birth	9	10	9	—	14	10	10	7
161 (2)	Injury at birth	66	48	93	—	116	59	59	66
162 (2)	Atelectasis	51	51	51	—	63	52	63	17
163	Lack of care	924	909	941	—	1,000	873	959	868
165—174	Suicide	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
175—203	Other violence	971	979	954	1,000	985	978	967	957
204—205 (2)	Ill-defined causes	276	288	260	—	308	416	187	275
205 (3)	Cause not specified	952	1,000	875	—	1,000	1,000	875	1,000

* Including inquests adjourned and not resumed. *See* Note to Table LXXI.

Table LXXVI.—England and Wales, 1928 : Uncertified Deaths per Thousand Deaths registered from the Same Cause.

International List Number.	Cause of Death.	Total.	Males (including non-civilians).	Females.	Non-Civilians.	Civilians.			
						London.	County Boroughs.	Urban Districts.	Rural Districts.
	All Causes	10	11	9	2	1	8	12	16
1—42	Infectious diseases	2	2	2	—	0	2	3	4
43—69	Other general diseases	2	2	2	—	0	2	2	3
70—86	Nervous diseases	15	17	13	—	1	13	17	22
87—96	Circulatory diseases	14	17	12	—	2	13	17	21
97—107	Respiratory diseases	7	6	8	—	1	6	8	12
108—127	Digestive diseases	5	5	5	—	—	5	6	8
128—142	Non-venereal diseases of the genito-urinary system—								
	Males	2	2	—	—	—	1	3	4
	Females	3	—	3	—	—	3	3	3
143—150	The puerperal state	5	—	5	—	—	4	9	3
151—154	Diseases of the skin, etc.	3	4	2	—	—	5	3	2
155—158	Diseases of the bones, etc. ..	3	3	3	—	—	3	—	10
159—163	Malformations : infantile diseases..	19	19	19	—	2	18	20	27
164	Old age	33	39	29	—	1	22	36	50
165—203	Violence	1	1	3	—	—	1	2	2
204—205	Ill-defined and unstated causes ..	514	518	507	1,000	67	383	585	556
7	Measles	2	2	1	—	—	2	2	7
9	Whooping cough	2	1	3	—	—	2	4	2
10	Diphtheria	3	6	1	—	—	3	3	6
11	Influenza	4	4	4	—	—	2	5	6
31	Phthisis	2	2	2	—	1	1	2	3
32—37	Other tuberculous diseases ..	1	1	2	—	—	1	2	2
43—49	Cancer	1	1	1	—	—	1	1	2
57	Diabetes	5	5	5	—	—	5	6	5
60	Diseases of the thyroid gland ..	10	16	9	—	—	9	15	9
71	Meningitis	7	6	7	—	—	7	9	5
74 (*a*) 1	Cerebral hæmorrhage	15	18	13	—	—	13	17	20
74 (*a*) 2	Apoplexy (lesion unstated) ..	39	54	27	—	—	14	50	55
75	Paralysis of unstated origin ..	9	9	9	—	—	5	9	17
78	Epilepsy	23	22	23	—	—	24	21	31
79 and 80	Convulsions	98	100	96	—	11	86	103	132
89	Angina pectoris	50	53	41	—	5	50	58	79
90 (1)–90 (4)	Valvular disease of heart	11	14	8	—	3	11	12	13
90 (5)	Fatty heart	35	34	35	—	—	44	34	49
90 (7)	Other or unspecified myocardial disease.	11	15	8	—	1	13	13	15
87, 88, 90(6), 90(8), 90(9)	Other heart disease	37	41	34	—	7	21	42	61
91 (*b*)	Arterio-sclerosis	4	6	3	—	1	4	5	6
92	Embolism and thrombosis ..	30	16	44	—	—	19	43	42
99	Bronchitis	11	11	12	—	1	12	12	18
100	Broncho-pneumonia	3	2	3	—	0	2	2	8
101 (*b*)	Pneumonia (not otherwise defined)	11	11	12	—	—	11	14	14
105	Asthma	13	14	12	—	5	12	9	25
112 (1)	Inflammation of stomach	16	14	17	—	—	12	22	17
111 (*a*) and 112 (2)	Other diseases of stomach ..	9	9	9	—	—	10	8	17
113 and 114	Diarrhœa and enteritis	7	7	9	—	—	6	10	15
118	Hernia and intestinal obstruction ..	4	4	4	—	—	5	3	4
129	Chronic nephritis	3	3	3	—	—	2	4	5
159	Congenital malformations	10	9	11	—	—	9	12	13
160	Congenital debility, sclerema, etc...	30	25	39	—	—	29	28	45
161 (1)	Premature birth	19	20	17	—	4	18	20	25
161 (2)	Injury at birth	13	12	14	—	—	10	18	16
163	Lack of care	36	45	25	—	—	70	—	75
182	Accidental drowning	2	2	3	—	—	6	—	2
204	Sudden death (1—70)	514	493	554	—	—	286	646	569
205 (1)	Heart failure (1—70)	699	695	704	1,000	—	747	727	643
205 (2)	Other ill-defined causes	178	200	155	—	100	34	207	357
205 (3)	Cause not specified	24	—	62	—	—	—	63	—

Table LXXVII.—England and Wales, 1928 : Deaths certified by Coroner after Post Mortem.—Cases per Thousand Deaths registered from the Same Cause.

International List Number.	Cause of Death.	Total.	Males (including non-civilians).	Females.	Non-Civilians.	Civilians.			
						London.	County Boroughs.	Urban Districts.	Rural Districts.
	All Causes	14	16	12	21	38	12	11	9
1—42	Infectious diseases	5	6	4	25	13	5	4	2
43—69	Other general diseases	4	5	3	26	10	3	3	3
70—86	Nervous diseases	14	14	14	43	47	12	11	8
87—96	Circulatory diseases	32	40	23	77	83	27	25	19
97—107	Respiratory diseases	15	16	15	22	34	15	11	10
108—127	Digestive diseases	14	15	12	57	32	10	12	11
128—142	Non-venereal diseases of the genito-urinary system—								
	Males	13	13	—	—	38	14	8	6
	Females	14	—	14	—	46	11	9	7
143—150	The puerperal state	24	—	24	—	81	21	19	12
151—154	Diseases of the skin, etc.	3	3	4	—	15	3	2	—
155—158	Diseases of the bones, etc. ..	12	10	15	—	16	9	14	10
159—163	Malformations : infantile diseases..	12	12	11	—	35	11	9	8
164	Old age	1	1	1	—	1	1	1	2
165—203	Violence	1	1	2	—	1	0	2	2
204—205	Ill-defined and unstated causes ..	23	28	15	—	133	—	29	27
7	Measles	3	3	2	—	4	1	2	2
9	Whooping cough	0	—	1	—	2	—	—	—
10	Diphtheria	6	5	6	—	23	4	3	2
11	Influenza	3	3	2	143	2	2	4	1
31	Phthisis	6	7	5	21	18	5	4	3
32—37	Other tuberculous diseases ..	4	5	3	—	5	7	3	2
38	Syphilis	22	26	13	—	40	23	17	5
43—49	Cancer (all forms)	3	4	2	31	9	2	2	2
57	Diabetes	2	1	3	—	11	1	1	2
62	Diseases of the thymus	341	417	215	—	217	352	439	263
71	Meningitis	29	36	20	—	80	22	31	14
74	Cerebral hæmorrhage, apoplexy, etc.	16	15	16	—	63	13	12	7
78	Epilepsy	22	24	20	—	52	13	20	25
79 and 80	Convulsions	29	30	27	—	65	39	17	22
84 (2)	Cerebral tumour	22	22	22	—	75	13	18	8
87	Pericarditis	167	137	202	—	182	162	188	128
88	Acute endocarditis and myocarditis	18	23	15	—	37	20	14	11
89	Angina pectoris	171	184	142	250	441	134	106	89
90 (1—4)	Valvular disease of heart	28	39	20	—	83	24	22	19
90 (5)	Fatty heart	215	273	172	—	365	213	179	162
90 (6)	Cardiac dilatation	46	78	12	—	111	52	50	20
90 (7)	Other or unspecified myocardial disease.	15	19	12	250	37	13	10	10
90 (9)	Heart disease undefined	15	21	10	—	21	14	15	15
91 (*a*)	Aneurysm	198	179	264	—	353	180	154	101
91 (*b*) 1	Arterio-sclerosis with record of cerebral vascular lesion.	11	11	10	—	44	10	5	5
91 (*b*) 2	Arterio-sclerosis without record of cerebral vascular lesion.	13	15	11	—	25	14	14	5
92	Embolism and thrombosis ..	96	115	78	—	48	65	143	83
99	Bronchitis	5	5	4	—	20	3	3	2
100, 101	Pneumonia (all forms)	23	22	24	—	44	23	16	16
102	Pleurisy	25	29	18	—	32	25	22	24
103	Congestion and hæmorrhagic infarct of lung.	50	76	31	1,000	44	67	42	39
109	Diseases of pharynx and tonsils ..	22	28	17	—	98	12	19	9
111	Ulcer of stomach or duodenum ..	21	18	30	—	57	13	16	16
113, 114	Diarrhœa and enteritis	7	8	6	—	15	7	6	3
117	Appendicitis and typhlitis ..	8	9	8	67	14	12	5	5
118	Hernia and intestinal obstruction ..	17	18	16	333	47	13	14	10
122	Cirrhosis of liver	11	9	15	—	23	9	6	15
125	Diseases of the pancreas	69	99	44	—	69	68	58	92
129	Chronic nephritis	18	19	16	—	55	16	10	9
131	Other diseases of the kidneys and annexa.	33	41	27	—	101	28	19	—
159	Congenital malformations	26	28	23	—	70	15	26	25
161 (1)	Premature birth	4	5	3	—	14	4	2	3
161 (2)	Injury at birth	17	17	16	—	58	16	13	4
162 (2)	Atelectasis	56	52	62	—	143	69	30	22

Table LXXVIII.—England and Wales, 1928 : Deaths certified by Coroner after Inquest or after Post Mortem without Inquest and Uncertified Causes of Death.—Cases per cent. of Total Deaths (from all causes) registered at the Same Ages.

	Certified by Coroners.				Uncertified Cases.
	After Inquest.			After P.M. without Inquest.	
	Total.	Deaths from Disease.	Deaths from Violence.		
All Ages ..	6·8	2·3	4·5	1·4	1·0
0–	4·1	2·6	1·5	1·5	1·6
1–	8·3	1·7	6·6	0·8	0·5
5–	15·5	3·5	12·0	1·3	0·7
15–	15·5	2·4	13·1	0·8	0·3
25–	12·7	2·6	10·1	1·4	0·4
35–	11·3	3·1	8·2	1·6	0·6
45–	9·3	3·0	6·3	2·0	0·9
55–	7·0	2·8	4·2	1·9	1·1
65–	4·5	2·1	2·4	1·5	1·2
75 and up ..	3·1	1·0	2·1	0·8	1·1

MEDICAL CERTIFICATION.

Concurrently with the coming into operation in July, 1927, of the Births and Deaths Registration Act, 1926, certain changes in the procedure of death registration were introduced with the object of securing that where the medical practitioner in attendance upon the deceased had not seen the deceased within a reasonable period before the date of death, the death could not be registered unless either the practitioner had seen the body of the deceased after death or the case had been reviewed by a coroner. Objections had been raised that the previous procedure permitted the registration of deaths and the burial of deceased persons on the strength, virtually, of the certificate of a practitioner who had not seen the deceased after death and who had not seen him alive within a reasonable period ; and Regulations were made requiring a death to be reported to the Coroner if the medical attendant certifying the cause of death had seen the deceased neither after death nor within 14 days before death. This period of 14 days was fixed experimentally in the first instance and subject to reconsideration.

The new procedure was adopted as a means of progressive improvement in the existing system by which the substantial requirements of the case could be met. At the same time an undertaking was given that statistics of the effect of this change would be

annually published in order that progress might be noted and a proper appreciation formed as to the true extent of any problem which might ultimately be found to call for solution by other means.

As the new arrangements were in operation for six months only of the year 1927 the first publication of statistics was deferred until the experience of a whole year's working became available, and the subject thus falls to be dealt with for the first time in the present volume for the year 1928. The statistics are given with a degree of elaboration which it is not intended to repeat annually; but as the figures for 1928 will serve as the datum line for any special comparative tabulations from particular aspects of the matter which may appear necessary at any future date, it was thought expedient to provide the initial material for the purposes of comparison on as ample a basis as possible.

The immediate question upon which the figures are more specifically intended to bear is the extent to which death registration and burial take place on the strength of the certificate of a medical attendant who has seen the body of the deceased after death. But in any statistical analysis it is necessary for all practical purposes to group with such cases those where the death was the subject of a Coroner's inquest or post mortem examination, or came under review by a Coroner prior to registration and burial. These cases are therefore included in the following table under the head of " Seen."

Table LXXIX.—Summary of Certification of Deaths Registered During the Year 1928.

	Registered Medical Practitioner.	Inquest or Coroner's P.M. without Inquest.	Other cases reviewed by Coroner.*	Total deaths registered.	
				No.	Percentage.
Seen after death ..	192,468	37,716	4,578	234,762	51·0
Not seen after death	223,519	—	—	223,519	48·5
No statement ..	2,108	—	—	2,108	0·5
	418,095	37,716	4,578	460,389	100·0

* Cases without certificate of registered medical practitioner in attendance (which since 1914 must be referred by Registrar to Coroner) where Coroner declined to hold inquest.

The " No statement " cases shown above represent, it is clear, a temporary feature which should disappear in future annual returns and which is solely due to the inception of the new procedure. In the first quarter following the introduction of the new arrangements the percentage of failures to give the requisite

information was 1·4; but the percentage has steadily declined quarter by quarter, and stood at 0·3 only for the last quarter of 1928. It may be expected therefore to disappear; but steps will be taken should it prove necessary, to obtain complete returns.

It further remains to analyse the figure included above as "Not seen." This figure calls for examination from two aspects.

In the first place, of the 48·5 per cent., or 223,519 deaths in all, included above as "Not seen" after death, a substantial proportion, viz., 60,186, took place in hospitals and other residential institutions. It will be clear that many of the grounds for the dissatisfaction which has been expressed in some quarters cannot apply to the case of deaths occurring under the care and organised attention which is afforded in the institutions in question. It is, moreover, possible that a number of the deaths in institutions returned as "not seen" were only so returned in a technical sense. The statutory certificate of cause of death must be given by the practitioner in attendance upon the deceased during his last illness; and where in the course of institutional routine the deceased is seen after death by some other practitioner than the practitioner who attended him in life, the latter, who should normally give the certificate required, would be unable to certify that he had seen the deceased after death. To meet this point suggestions have been made as to the necessary adaptation of the form of certificate; but it is probable that advantage has not been taken of this suggestion in all cases, and that a proportion of the "not seen" cases of deaths in institutions were in fact "seen" cases, though not so returned for the technical reasons indicated.

But the total figure of "not seen" cases needs also to be examined from another, very important, aspect. The certificates record the day on which the deceased was last seen alive by the practitioner in attendance; and the following figures will make it at once apparent that in the great majority of these cases, whether occurring in hospitals and institutions or certified by practitioners in private practice, the deceased was seen by the certifying medical practitioner very recently before death. Of the "not seen" cases, in 44·06 per cent. (or 21·64 per cent. of the total deaths) the deceased was so seen on the very day of death; and in 39·65 per cent. (or 19·41 per cent. of the total deaths) on the day before. Many of those seen on the day before death must, of course, have been seen within a few hours only of death since the day runs from midnight to midnight. It thus becomes clear that of the 223,519 deaths returned in Table LXXIX as "not seen," in 83·71 per cent., or 188,970 cases, the deceased was seen alive by the medical attendant on the day of death or the day before; and if these cases, totalling to 41 per cent. of the total deaths, are added to those seen after death, as conforming to a standard which satisfies reasonable requirements, the proportion of such cases is increased to 92 per cent. Further, if those "seen alive" within two days are added, the total is increased to 96 per cent.

In the following table the " not seen " cases are classified by reference to the period within which the deceased was seen alive. It will be noted that the bulk of the cases (83·71 per cent. as already stated) are included under the same day or one day before death. The figures immediately tail off into very small percentages, while the total percentage of those not seen within the first week prior to death is under 2 per cent., or ·7 per cent. only of the total deaths.

Table LXXX.—" Not Seen " after Death—Interval between Death and Date when last seen alive.

	Percentage of Deaths " Not Seen."	Percentage of Total Deaths.
Same day	44·1	21·6
1 day before	39·6	19·4
2 days before	8·0	3·9
3–6 days before	6·3	3·1
7–13 days before ..	1·5	0·7

As the field for any enlargement of the proportion of cases " seen " after death is limited to the cases of deaths certified by medical practitioners it will be of interest to analyse such cases in more detail.

Table LXXXI.—Comparison of Proportions of " Seen " and " Not Seen " in Institutions and in Private Practice (Coroners' Cases Excluded).

Year.	Poor Law Institutions.		Voluntary Hospitals.		Private Practice.		Total.	
	Seen.	Not Seen.	Seen.	Not Seen.	Seen.	Not Seen.	Seen.	Not Seen.
	%	%	%	%	%	%	%	%
1928 ..	36·4	63·6	69·8	30·2	42·7	57·3	51·3	48·7

Note.—The statutory notice of death respecting all deaths in Mental Institutions provides for a statement of marks of violence found on the body; and in view of this provision all deaths in these institutions have been classed as " seen " after death.

It will be noted that the highest proportion of " seen " cases is found in the case of deaths occurring in Voluntary Hospitals, and that the next highest proportion is found in the case of those certified by practitioners in private practice.

In proportion, however, as the deaths of persons seen during the last few days of life are taken into account, the differences become less marked.

Table LXXXII.—Comparative Analysis of Proportions for Institutions and Private Practice of Cases " Seen " after Death and " Not Seen " after Death but Seen Alive within Two Days of Date of Death (Coroners' Cases Excluded).

	Poor Law Institutions.	Voluntary Hospitals.	Private Practice.
Seen after Death	36·4	69·8	42·7
Seen alive on :—			
Day of Death	33·6	17·6	23·1
One Day Before	26·5	11·1	22·6
Total	96·5	98·5	88·4
Seen Alive Two Days Before ..	2·3	0·9	5·5
Total Seen after Death and Seen Alive within Two Days of Date of Death though Not Seen After Death ..	98·8	99·4	93·9

No time comparisons can usefully be made, since the figures for 1928 are the first reliable figures upon the subject which have become available. It may be noted, however, that estimates previously employed in the public discussion of the subject have quoted the percentage of " seen " as approximately 40 per cent. The 1928 experience thus indicates, at all events, that the present position is somewhat better than as previously estimated.

More reliable comparisons may, however, be made regarding local variations in the percentages; though in the case of Institutions the matter is so largely governed by the practice of individual large Institutions that comparative local figures are of little value. In private practice the highest proportions of " seen " cases occur in London and in the metropolitan and southern counties. In London the proportions range from 46·6 per cent. in the poorer districts of the East to 73·4 per cent. in the well-to-do districts of the West. The lowest proportion in the country is found in the sparsely populated and mountainous counties of North Wales (25·2 per cent.). Low proportions occur, however, in other areas in which they are less easily understandable.

In the following Table are given the proportions for certain Registration or Poor Law Union " Counties " (or aggregates of such " Counties ") in which the percentage of " seen " in private practice is 35 or less. The figures are obtainable only by reference to existing areal units for registration purposes; and cannot, it is regretted, be given under present conditions for administrative areas. The precise contents of the sub-divisions and " counties " included in the Table can be ascertained from the Registrar-General's Official List (Part I).

The limit of 35 per cent. has been adopted as well below the average for private practice in England and Wales as a whole, which is 42·7 per cent. In the areas included in the Table the total number of deaths certified in 1928 was 101,369.

Table LXXXIII.—Registration sub-divisions in which the percentage of " seen " cases in Private Practice in 1928 was 35 or under.

Poor Law Union Counties comprised in the Registration Sub-division.	Percentage of " seen " cases.
Cardiganshire, Brecknockshire, Radnorshire, Montgomeryshire, Flintshire, Denbighshire, Merionethshire, Caernarvonshire and Anglesey	25·2
Staffordshire	28·2
Worcestershire	32·1
Leicestershire, Rutlandshire and Lincolnshire	32·7
Yorkshire (part of) viz.: Unions of Wakefield, Pontefract, Hemsworth, Barnsley, Penistone, Wortley, Sheffield, Rotherham, Doncaster, Thorne, Goole, Selby and Tadcaster	33·3
Nottinghamshire and Derbyshire	33·5
Northamptonshire, Huntingdonshire, Bedfordshire and Cambridgeshire	34·0
Durham	34·2
Norfolk	34·5
Monmouthshire, Glamorganshire, Carmarthenshire and Pembrokeshire	34·7
Lancashire (part of), viz.: Unions of Wigan, Warrington, Leigh, Bolton, Bury and Barton-upon-Irwell	35·0

POPULATION.

The total population of England and Wales as at the 30th June, 1928, has been estimated at 39,482,000 persons, 18,896,000 being males and 20,586,000 females.

The total is in excess of the 1921 census figure by some 1,595 thousand persons, so that the population is assumed to have grown by 4·2 per cent. over the seven intervening years, an arithmetical average increase of ·60 per cent. per annum as compared with ·49 per cent. per annum during the decade 1911–1921. As between the sexes, the figures indicate a higher rate of growth amongst males and the sex inequality, expressed as 1,096 females per 1,000 males in 1921 is thereby assumed to have been reduced to 1,089 females per 1,000 males at the present time.

The method now adopted in arriving at the estimates consists of tracing forward the last census population, making appropriate additions or deductions for births, deaths and migration from such records of these movements as are available. The largest component in the net increase is what is termed the natural increase, viz., the excess of births over deaths registered in the country ; it is in fact in excess of the net increase, the migration element being outward on balance, and may for all practical purposes be accepted as an exact record. But the same cannot be said of the migration element of the movement. Information

regarding permanent migrants (*i.e.*, persons changing their permanent residence) between this country and places outside Europe, and also statistics of passenger traffic to and from the United Kingdom are collected by the Board of Trade. The movement of aliens is also dealt with by the Home Office, and from the various War Departments changes in the disposition of non-civilians are available. On the other hand, there is no record of the movement between England and Wales and the other countries of the United Kingdom, and allowance has to be made for this in computing an estimate on the data gathered from the records which are available.

Such error as there may be in the population estimate is practically wholly attributable to migration, and it is one which will tend to grow in degree as the date of the preceding census becomes more remote. It is unlikely to be as much as 1 per cent. of the total population estimate and if the success which attended the estimation of the national populations of the last intercensal period as judged by the 1921 census is repeated, it will be of a considerably lower order.

Age Distribution.—The analysis of the sex population totals into their respective age components which is shown in Table LXXXIV, has been derived from the corresponding 1927 distribution by the survivorship method used in recent years ; this, briefly, consists

Table LXXXIV.—England and Wales.—Estimated Age Distribution of the Population—Mid-1928.

Age-Group.	Persons.	Males.	Females.
All ages	39,482,000	18,896,000	20,586,000
0—	622,381	315,624	306,757
1—	624,275	314,870	309,405
2—	637,525	321,756	315,769
3—	646,971	327,101	319,870
4—	659,721	333,083	326,638
0—	3,190,873	1,612,434	1,578,439
5—	3,510,070	1,775,892	1,734,178
10—	3,169,322	1,590,734	1,578,588
15—	3,546,949	1,777,756	1,769,193
20—	3,499,736	1,739,143	1,760,593
25—	3,182,451	1,507,036	1,675,415
30—	2,905,048	1,306,628	1,598,420
35—	2,770,961	1,260,352	1,510,609
40—	2,615,277	1,201,136	1,414,141
45—	2,574,610	1,194,869	1,379,741
50—	2,297,881	1,091,228	1,206,653
55—	2,002,290	954,781	1,047,509
60—	1,527,852	719,605	808,247
65—	1,154,848	528,715	626,133
70—	769,455	336,818	432,637
75—	465,213	190,973	274,240
80—	215,844	80,091	135,753
85 & upwards	83,320	27,809	55,511

of (1) obtaining the year's deaths arising from the population at each age in 1927, and treating the survivors as the population at the next higher age in 1928, (2) completing the table by the addition of the population aged 0–1, represented by the survivors at the middle of 1928 of the births occurring between the middle of 1927 and the middle of 1928, and (3) adjusting the results of these two operations in respect of migrants in accordance with such age statistics as are available in respect of them.

The average ages of the mid-1928 population according to the estimated age distribution are 31·1 and 32·7 for males and females respectively, as compared with averages of 29·9 and 31·2 at the last census, representing increases in the average age of 1·2 and 1·5 during the seven years. Between 1911 and 1921 the average ages increased by 1·9 and 2·1 respectively.

Local Populations.—The 1928 estimates of the populations of the several local government areas in England and Wales which take their place in the series of estimates annually framed by the Department have, on this occasion, acquired a special significance from the fact that they form a principal factor in the basis of the distribution of large exchequer monies under the Local Government Act, 1929. Their use for such purpose necessitated the utmost care in their preparation and a variety of tests and special measures were instituted in order that the errors attending them, inevitable at a date seven years after the previous census, should fall within the lowest attainable limits.

The general process of estimation described in the Review for last year and evolved from the experience of recent years was retained since the type of data reflecting local movements of population had not been enlarged. The only change of any consequence that need be mentioned in this connection was the use of the Parliamentary electorate in place of the Local Government electorate for the estimation of migration movements between 1921 and 1928; the Parliamentary electorate covers a rather wider section of the population and this was preferred after consideration, as being likely to prove the better medium for the reflection of changes other than those automatically accounted for in the registration records of births and deaths. Apart from this, the innovations introduced as a special measure on this occasion were directed more to detail so as to bring to light local peculiarities and to avoid anomalies which might be produced by the strict adherence to a rigid estimation formula.

In the first place, all local authorities were themselves circularized with a view to securing that any statistical data bearing on the question, which had been incidentally compiled in the course of local administration should be brought to the notice of the Department. A substantial number of local authorities responded to this invitation and though in some instances the data supplied were accompanied by interpretations and inferences which the material did not support, they were on the whole of distinct service.

At the same time local registrars of births and deaths were asked for returns of the populations of large institutions and similar premises in order to secure the proper representation of those elements of the community of which the changes from time to time would not be reflected by the normal methods of estimation.

When the estimates had been framed in accordance with the information gathered from these various sources they were subjected to a series of tests in order to bring to light anomalies which might have escaped detection in the preliminary examination of the data. Birth-rates, death-rates, proportions of populations to electors and to houses (where known) were calculated for each area on the basis of the new figures ; their relations to the similar rates and proportions existing at the date of the 1921 census were then examined by reference to the corresponding changes recorded for the country as a whole and where disparities disclosed by these mutually independent tests indicated a possible over- or under-statement of population the effect of the estimation procedure was re-examined with a view to the modification of the result if and where this appeared to be justified on the basis of the facts themselves.

The estimates have provoked rather more than the usual amount of criticism this year as had been anticipated in view of the financial interests involved under the Local Government Act, 1929. They are not, however, different in form and almost unexceptionally lead to the suggestion that the official figures understate the facts. The contention implied and sometimes pressed that local authorities, with their responsibility for the administration of a variety of local services should be in an exceptionally favourable position for the accurate estimation of their respective local populations is *prima facie* not unreasonable ; but it is not supported by the long experience of the Department in the many differences of opinion between them and the Department when tested by Census results. Indeed, it may be confidently stated, not as a matter of surmise, but on the strength of actual experience that, were locally prepared estimates of population to be aggregated, the result would largely exceed the total population of the country. The situation arises, no doubt, from the difficulty of incorporating in a single local estimate the comprehensive effect of movements in the population as a whole ; national changes dominate local movements to a far greater extent than is generally realised and there can be little doubt that in this decennium, notwithstanding the exceptional housing developments which are recorded almost everywhere, the number of areas showing a decrease in population between 1921 and 1931 (the next census year) will prove to be greater and the increases less than those of previous intercensal periods.

In transmitting the 1928 estimates to the Minister of Health the Registrar-General dealt with some of the misconceptions which have arisen in the interpretation of local statistics. The

relevant paragraphs may with advantage be reproduced as follows :—

" In a large proportion of cases the representations received submitted, by way of claim that the population of the area had been under-estimated in previous years, a method of estimation which is familiar to the Department from past experience of similar applications but upon which it has never been found possible to rely. This method consists of the ascertainment of the present number of houses in the area and the application to that number of a given ratio of occupants per house, assuming for the purpose either the ratio of persons per dwelling as ascertained at the last census or some other estimated figure. It is frequently possible to arrive at reliable conclusions as to the current number of dwellings ; but the ratio of persons per dwelling is a figure for which no data are available except in Census years, and which requires for its construction the very population figures which the method in question seeks to elucidate. The position as disclosed by the 1921 census is wholly inapplicable to the present time in view of the greatly increased provision of houses : for the country as a whole, indeed, notwithstanding an estimated increase in the total population since 1921 of 4·21 per cent., the average number of occupants per dwelling has been reduced in the interval by about 8 per cent. Wide variations, moreover, from this average movement are to be expected in individual areas : the greatest decline would naturally take place in areas where housing pressure was highest at the census date. It is thus clear that the 1921 ratio affords no evidence as to existing conditions in any particular area. Any assumed ratio of occupants per dwelling must be of the nature of a guess, and must contain, at the best, a margin of error which, when transferred to the resulting population figure, would cover widely divergent estimates.

" Similar considerations apply to representations received in favour of estimates based upon a previously ascertained ratio of the population to the electorate. While statistics of the electorate, properly employed, have been found of the greatest value in the official processes of estimation, the average ratio of population per Parliamentary elector, for example, has declined since 1921 for the country as a whole notwithstanding the increase in population, and must have been the subject of more substantial variation in individual areas. No direct use of these figures can thus reliably be made in the manner which has been suggested.

" In one other respect future misunderstanding may be obviated by an explanation which has often proved necessary in the past. Local authorities have occasionally questioned the difference between one annual estimate and that for the preceding year as insufficiently justified by population movements in the interval, on the assumption that each estimate is strictly based upon the preceding estimate and takes account of subsequent

changes only. This is not, however, the official practice. If this course had been adopted, any imperfection in any annual estimate would be confirmed, and the consequent error would be cumulative over a succession of years. The practice of the Department, on the contrary, has been not to exclude any evidence of population movement even though received later than the publication of the estimate for the period in which it occurred. Thus each annual process of estimation involves, in a sense, a fresh review of the whole period which has elapsed since the previous census, advantage being taken of any new material which has come to light to promote the progressive correction and perfection of the figures."

Non-Civilian Population:—It will be observed in the tables in which the estimated local populations are given (Table 14 and Table E) that the local deaths and death-rates refer to civilians only and in conjunction with these a civilian population should preferably be used instead of a total

Table LXXXV.—Estimated Civilian Population by Sex and Age in the middle of the Year 1928.

(Figures given to the nearest hundred.)

		All Ages.	0–	5–	15–	25–	35–	45–	55–	65–	75 and upwards
All areas:—											
England and Wales ..	M	18,731,0	1,612,4	3,366,6	3,428,2	2,766,6	2,437,3	2,281,2	1,674,4	865,5	298,8
	F	20,586,0	1,578,4	3,312,8	3,529,8	3,273,8	2,924,7	2,586,4	1,855,8	1,058,8	465,5
North	M	6,325,4	552,6	1,137,9	1,192,7	961,8	841,7	771,0	536,4	258,2	73,1
	F	6,800,5	543,8	1,125,0	1,201,3	1,103,5	980,2	845,6	581,4	307,8	111,9
Midlands	M	6,110,3	521,3	1,107,9	1,126,3	882,5	784,3	732,9	549,3	295,5	110,2
	F	6,632,5	508,2	1,087,7	1,133,2	1,031,3	928,6	823,1	599,0	355,1	166,3
South	M	4,951,5	418,9	869,3	853,2	714,7	638,2	619,7	480,3	258,7	98,5
	F	5,815,7	408,8	851,5	955,4	927,2	836,5	764,3	570,7	338,8	162,5
Wales	M	1,347,8	119,8	251,5	258,0	208,6	173,7	157,7	108,4	53,1	17,0
	F	1,337,3	117,6	248,6	239,9	211,8	179,4	153,4	104,7	57,1	24,8
London	M	2,058,4	183,2	359,3	368,2	318,2	271,4	255,9	183,9	89,8	28,5
	F	2,399,8	178,9	358,2	426,5	407,2	345,1	303,2	211,5	117,5	51,7
County Boroughs; ..	M	6,263,7	555,8	1,139,6	1,154,5	959,7	845,2	768,0	520,2	248,0	72,7
	F	6,939,2	546,7	1,134,3	1,243,9	1,136,8	1,001,9	854,3	581,6	314,0	125,7
North	M	3,346,2	297,8	604,9	626,7	517,0	455,1	413,4	273,9	124,8	32,6
	F	3,657,3	293,2	602,1	659,4	604,4	533,5	451,3	301,3	156,2	55,9
Midlands	M	1,991,6	177,1	368,5	369,4	303,2	266,6	239,8	162,3	80,2	24,5
	F	2,204,9	174,4	367,7	402,3	360,5	313,4	265,4	180,0	99,5	41,7
South	M	642,9	55,5	115,1	103,8	92,0	85,4	82,1	62,5	33,4	13,1
	F	795,1	54,2	113,5	127,7	124,2	116,6	106,4	80,1	48,2	24,2
Wales	M	283,1	25,4	51,1	54,6	47,6	38,0	32,8	21,5	9,6	2,5
	F	281,9	24,9	51,0	54,5	47,7	38,4	31,2	20,2	10,1	3,9
Other Urban Districts; ..	M	6,442,4	543,6	1,170,7	1,174,2	950,7	846,1	789,9	573,6	293,5	100,0
	F	7,160,5	531,9	1,151,6	1,227,7	1,132,6	1,024,7	908,9	650,1	370,2	162,8
North	M	2,082,8	177,2	371,7	391,2	317,3	279,0	255,7	179,2	87,1	24,3
	F	2,243,3	174,2	368,1	390,9	363,3	324,6	283,4	197,0	104,6	37,2
Midlands	M	2,457,2	205,6	449,8	451,8	358,7	320,2	298,3	218,5	113,6	40,7
	F	2,730,9	200,2	441,2	474,3	427,9	388,8	343,7	245,1	143,0	66,7
South	M	1,255,1	101,8	224,0	207,2	174,2	162,4	160,0	126,7	70,3	28,5
	F	1,544,7	99,2	217,9	245,3	238,8	225,1	209,4	161,3	98,5	49,2
Wales	M	647,3	59,0	125,2	123,9	100,6	84,5	75,9	49,2	22,5	6,5
	F	641,6	58,3	124,4	117,2	102,6	86,2	72,4	46,7	24,1	9,7
Rural Districts;	M	3,970,5	329,9	697,0	733,4	539,1	475,2	467,4	396,7	234,2	97,6
	F	4,086,5	320,9	668,7	631,7	597,2	553,0	520,0	412,6	257,1	125,3
North	M	896,5	77,6	161,3	174,8	127,6	107,6	101,8	83,3	46,3	16,2
	F	899,9	76,4	154,8	151,0	135,8	122,1	110,9	83,1	47,0	18,8
Midlands	M	1,661,6	138,6	289,6	305,1	220,7	197,6	194,8	168,5	101,7	45,0
	F	1,696,7	133,6	278,8	256,6	242,9	226,4	214,0	173,9	112,6	57,9
South	M	995,1	78,4	170,9	174,0	130,3	119,0	121,7	107,2	65,2	28,4
	F	1,076,1	76,5	161,9	155,9	157,0	149,7	145,3	117,8	74,6	37,4
Wales	M	417,4	35,3	75,2	79,5	60,5	51,1	49,1	37,7	21,0	8,0
	F	413,8	34,4	73,2	68,2	61,5	54,8	49,8	37,8	22,9	11,2

population containing a number of non-civilians. In the majority of areas, however, the two populations may be regarded as sufficiently identical, and no special measures have been regarded as necessary in respect of them, but in a few areas in which the non-civilians were proportionally numerous, estimates of civilian populations have been provided in addition to total populations and are shown in footnotes appended to the tables.

Institutions :—The populations of Hospitals, Infirmaries, Asylums, etc., remain credited to the areas of enumeration, notwithstanding that some persons so included may, on a strict residence classification, more properly be assigned elsewhere.

Local Age Distributions, 1928.—Sex and age distributions have been prepared for the large aggregates shown in Table LXXXV. The populations at ages under five were obtained by the survivorship method (*see* page 146), and for later ages the total populations estimated by the formula given in the preceding section were distributed in accordance with the census age and sex distribution of the unit, the resulting figures being thereafter modified to allow for the change between 1921 and 1928 of the age distribution of the total population of the country.

United Kingdom and Irish Free State.—The populations of each of the countries of the United Kingdom and of the Irish Free State as estimated by their respective Registrars-General, are shown for each year from 1889 in Table A.

MARRIAGES.

The marriages registered in England and Wales during the year 1928 numbered 303,228, corresponding to a rate of 15·4 persons married per 1,000 of the population of all ages and conditions. The number so registered is 5,142, or 1·67 per cent. less than the number registered in 1927, and represents a decrease of 0·3 in the proportion married per 1,000 population.

The slight decrease is in itself of no particular significance. The marriages of 1927, as described in last year's Review, were abnormally numerous because of the inclusion amongst them of a number postponed from 1926 as a result of the coal stoppage and general strike of that year and a reduction this year was anticipated as a matter of course. If comparison be made with the average of the preceding five years 1923–1927, the position of 1928 records a slight improvement rather than a decline, but, whether it is due to the inclusion of a small remnant of the postponed 1926 marriages or not, the difference is negligible and falls well within the range of chance fluctuation which must always be expected in a series of records of this character.

The preference for the third quarter, noticeable in the records since the beginning of the present century, was maintained in 1928, the marriages in this period being 31 per cent. of the total, while the fourth, formerly the outstanding favourite, now

ranks third out of the four. The rate for the first quarter, representing less than 15 per cent. of the year's marriages, retained its customary place in being lower than that of either of the later quarters.

In the following table the marriages both of the current year and of a series of past periods are compared with the marriageable population consisting of bachelors and widowers in the case of men and spinsters and widows in the case of women at all ages over 15. The peak of the post-war marriage boom represented by the high rates of the year 1920 is seen to have been followed by a sharp decline to a level of rather more than 53 per 1,000 marriageable males and about 41 per 1,000 marriageable females in the year 1923; and, but for the fluctuations of 1926 and 1927 for which there is an adequate explanation, this level has been substantially maintained to the present time. The apparent difference between the male and female ratios is of course due to the inequality of the numbers of unmarried men and women in the population and since the former have always been in a minority—which has been unduly exaggerated as a result of the war—it is their numbers which primarily determine the marriageability of the population, so that, from one point of view, the male ratios may be regarded as providing the better indexes to the variations which have occurred from time to time in the incidence of marriage.

Table LXXXVI.—England and Wales. Annual Number of Marriages of Men and Women per 1,000 Marriageable Population of each Sex aged 15 and over, 1871–1928.

NOTE.—The annual numbers of marriages have been taken as the average of the three years about each Census prior to 1921. During the 1921 period the marriage-rates were changing rapidly and it has been deemed preferable to show the rates for this period by individual years.

Year.	Bachelors, Widowers, Spinsters and Widows.	Bachelors and Widowers.	Spinsters and Widows.
1871	57·2	62·3	52·9
1881	51·5	56·0	47·6
1891	49·8	54·6	45·7
1901	48·7	53·5	44·7
1911	46·3	50·8	42·5
1920	61·7	71·5	54·7
1921	52·1	60·4	45·8
1922	48·2	55·8	42·5
1923	46·6	53·9	41·1
1924	46·6	53·6	41·2
1925	46·2	53·3	40·9
1926	43·4	50·0	38·3
1927	47·5	54·8	41·9
1928	46.4	53·7	40·9

Fluctuations of the general Marriage-rate in different Sections of the Country.—In Tables LXXXVII and LXXXVIII comparison is made of the year's marriages and marriage-rates in large geographical sections of the country, and an analysis of recent rates in Registration Counties is shown in Table LXXXIX.

The determination of marriage-rates for localities is not wholly satisfactory for several reasons. In a large proportion of cases the district of registration is the district of residence of only one of the parties and in some cases of neither. This difficulty, however, is probably of less moment in comparisons between large sections of the country than between smaller adjacent localities. Again, it has only been possible till now to tabulate marriages by registration areas, while the available estimates of population for years other than census years refer to administrative areas. The populations upon which the rates for such years are based have, therefore, to be derived from the estimated populations of the corresponding aggregates of administrative counties and county boroughs on the assumption of a ratio between the population of the registration and administrative areas. Any error so introduced is, however, probably small and not likely to have any appreciable effect upon the rates quoted.

Table LXXXVII.—Marriages of each year in Geographical Sections of the Country : 1914–1928.

	North.	Midlands.	South.	Wales.	England and Wales.
1914 ..	100,926	87,695	85,728	20,052	294,401
1915 ..	115,694	109,844	113,868	21,479	360,885
1916 ..	90,287	84,895	87,322	17,342	279,846
1917 ..	83,151	78,761	80,356	16,587	258,855
1918 ..	92,381	87,798	89,928	17,056	287,163
1919 ..	125,863	111,180	107,971	24,397	369,411
1920 ..	136,443	114,942	102,930	25,667	379,982
1921 ..	110,864	97,218	91,831	20,939	320,852
1922 ..	101,335	91,657	86,610	19,922	299,524
1923 ..	99,640	89,483	83,152	20,133	292,408
1924 ..	100,400	92,035	84,252	19,729	296,416
1925 ..	99,301	92,172	84,882	19,334	295,689
1926 ..	89,777	89,146	84,617	16,320	279,860
1927 ..	102,245	97,750	88,867	19,508	308,370
1928 ..	98,642	96,381	89,499	18,706	303,228

The decline shown for the country at large is seen from the above table to be shared between the North, Midland and Welsh sections, the South being exceptional in registering a small increase. For reasons already given, however, these movements are of a special and temporary nature, and if comparison be made with the average of the preceding five years as a safer standard than that of the year 1927 alone it will be found that the current numbers represent increases of the order of 5 and

4 per cent. in the case of the South and Midlands respectively and of less than ½ per cent. in the North and that Wales is the only section in which there is an actual decline, *viz.*, about 1½ per cent. The order of the sectional frequencies is generally associated with the masculinity of the several areas, the male rate being highest where the proportion of men in the population is lowest, thus accounting for the apparent contrasts produced by Wales on the one hand, which returns the lowest male frequency and the highest but one female frequency, or by the South on the other, where conditions are reversed. London females furnish the chief exception to this rule in exhibiting the highest female marriage rate notwithstanding their excess of numbers in the general population. The range of variation amongst females is, as usual, much less than amongst males in the several sections ; this may be due to a greater constancy in the marriage force in the case of the weaker sex or it may signify nothing more than that they have the greater share in determining where the marriage is to take place.

From the county analysis in Table LXXXIX it will be seen that the 1928 marriage-rate was highest in London, where it exceeded the mean for the country by 15·9 per cent. followed in order by Warwick, Leicester, Nottingham, Durham, Derby and Stafford, each with an excess in the neighbourhood of 11 per cent. Rural counties with few exceptions retain their customary place at the other end of the list. A decline, as

Table LXXXVIII.—Marriage-rate per 1,000 Marriageable Population aged 15 and over in Geographical Sections of the Country.

	Rate per 1,000 Marriageable Population aged 15 and over.			Ratio of local rate to England and Wales rate (taken as 1,000.)		
	1921	1927	1928	1921	1927	1928
Males						
England and Wales	60·4	54·8	53·7	1,000	1,000	1,000
North	61·6	53·5	52·0	1,020	976	968
Midlands ..	60·1	55·6	54·5	995	1,015	1,014
South (including London)	62·2	58·3	58·1	1,030	1,064	1,082
Wales	49·5	44·2	42·6	820	807	794
London ..	71·7	65·8	68·4	1,187	1,201	1,273
Females						
England and Wales	45·8	41·9	40·9	1,000	1,000	1,000
North	48·7	42·6	41·2	1,063	1,017	1,008
Midlands ..	46·1	43·1	41·9	1,007	1,029	1,026
South (including London)	41·8	39·4	39·1	913	940	956
Wales ..	49·5	44·5	42·7	1,081	1,062	1,046
London ..	46·5	42·9	44·4	1,015	1,024	1,086

Table LXXXIX.—Marriage-rate per 1,000 Marriageable Population —All Marriages and Marriages of Minors separately—in Registration Counties, 1921 and 1928.

Area.	All Marriages.				Minors.			
	Persons married per 1,000 marriageable population of the age of 15 and over.		Ratio to England and Wales rate.		Persons married per 1,000 marriageable population 15–21.		Ratio to England and Wales rate.	
	1921	1928	1921	1928	1921	1928	1921	1928
England and Wales ..	**52·1**	**46·4**	**1,000**	**1,000**	**15·6**	**14·1**	**1,000**	**1,000**
North	**54·4**	**46·0**	**1,044**	**991**	**17·7**	**14·5**	**1,135**	**1,028**
Cheshire	48·3	42·6	927	918	13·2	11·9	846	844
Lancashire	54·1	45·1	1,038	972	15·0	12·7	962	901
Yorkshire, West Riding	56·3	47·8	1,081	1,030	19·1	16·0	1,224	1,135
,, East Riding	56·1	46·7	1,077	1,006	19·7	16·2	1,263	1,149
,, North Riding	47·3	45·3	908	976	18·5	16·5	1,186	1,170
Durham	60·7	50·7	1,165	1,093	25·1	17·8	1,609	1,262
Northumberland ..	52·7	44·2	1,012	953	19·3	15·5	1,237	1,099
Cumberland	46·9	38·8	900	836	17·3	13·6	1,109	965
Westmorland	43·4	33·8	833	728	10·7	10·3	686	730
Midlands	**52·2**	**47·4**	**1,002**	**1,022**	**14·8**	**13·8**	**949**	**979**
Middlesex	50·2	47·0	964	1,013	11·8	12·0	756	851
Hertfordshire	44·7	39·3	858	847	12·2	10·8	782	766
Buckinghamshire ..	45·2	42·6	868	918	10·5	12·0	673	851
Oxfordshire	44·8	40·8	860	879	10·8	13·4	692	950
Northamptonshire ..	53·7	48·1	1,031	1,037	14·2	12·4	910	879
Huntingdonshire ..	54·9	41·8	1,054	901	18·0	17·0	1,154	1,206
Bedfordshire	50·7	43·3	973	933	14·2	12·9	910	915
Cambridgeshire ..	49·6	43·7	952	942	15·6	16·4	1,000	1,163
Essex	53·5	47·4	1,027	1,022	12·3	11·7	788	830
Suffolk	48·7	44·5	935	959	14·7	13·3	942	943
Norfolk	49·6	44·8	952	966	14·3	15·0	917	1,064
Gloucestershire ..	49·8	43·3	956	933	11·0	10·2	705	723
Herefordshire	42·7	37·0	820	797	8·5	10·3	545	730
Shropshire	45·7	39·2	877	845	10·7	11·8	686	837
Staffordshire	57·0	50·4	1,094	1,086	17·9	14·0	1,147	993
Worcestershire.. ..	49·2	46·7	944	1,006	13·6	12·1	872	858
Warwickshire	50·7	52·1	973	1,123	14·0	14·8	897	1,050
Leicestershire	58·9	51·2	1,131	1,103	17·5	15·6	1,122	1,106
Rutlandshire	39·4	29·4	756	634	6·2	8·6	397	610
Lincolnshire	54·3	47·1	1,042	1,015	19·4	18·1	1,244	1,284
Nottinghamshire ..	58·0	51·2	1,113	1,103	22·4	18·7	1,436	1,326
Derbyshire	56·9	50·6	1,092	1,091	18·2	17·5	1,167	1,241
South (including London)	**50·0**	**46·7**	**960**	**1,006**	**13·6**	**14·1**	**872**	**1,000**
London	56·4	53·8	1,083	1,159	15·5	15·5	994	1,099
Surrey	43·9	40·1	843	864	10·4	11·2	667	794
Kent	45·9	44·2	881	953	13·5	13·8	865	979
Sussex	39·4	37·3	756	804	11·5	12·5	737	886
Hampshire	48·5	45·6	931	983	13·7	15·5	878	1,099
Berkshire	46·1	42·8	885	922	11·8	12·0	756	851
Wiltshire	50·8	41·8	975	901	12·2	11·2	782	794
Dorsetshire	46·0	41·4	883	892	11·8	13·9	756	986
Devonshire	46·7	42·7	896	920	13·1	14·6	840	1,035
Cornwall	41·5	38·7	797	834	11·9	14·8	763	1,050
Somersetshire	46·0	40·6	883	875	11·0	10·2	705	723
Wales	**49·5**	**42·7**	**950**	**920**	**16·4**	**12·8**	**1,051**	**908**
Monmouthshire ..	53·8	48·6	1,033	1,047	18·5	13·9	1,186	986
Glamorganshire ..	56·6	47·0	1,086	1,013	19·8	14·4	1,269	1,021
Carmarthenshire ..	46·5	38·0	893	819	15·8	12·5	1,013	886
Pembrokeshire.. ..	43·3	34·5	831	744	12·2	9·9	782	702
Cardiganshire	29·6	26·4	568	569	5·7	7·1	365	504
Brecknockshire ..	46·0	35·9	883	774	11·8	9·0	756	638
Radnorshire	36·0	38·2	691	823	8·7	13·5	558	957
Montgomeryshire ..	38·9	33·1	747	713	8·7	8·7	558	617
Flintshire	40·8	36·3	783	782	8·5	10·3	545	730
Denbighshire	43·1	41·1	827	886	11·2	11·0	718	780
Merionethshire.. ..	34·4	34·2	660	737	6·9	7·9	442	560
Caernarvonshire ..	36·9	35·8	708	772	8·2	8·1	526	574
Anglesey	33·4	28·1	641	606	7·4	6·6	474	468

Table XC.—England and Wales. Annual Marriage-rate per 1,000 Bachelors, Widowers, Spinsters, and Widows respectively at each of several Age Periods, 1871–1928.

NOTE.—The annual numbers of marriages have been taken as the average of the three years about each Census prior to 1921.

Year.	Annual marriage-rate per 1,000 in each age group.						Marriage rate per 1,000 population over 15 in each class.	Ratio to corresponding rate for 1921.	Marriage rate which would have resulted had the 1921 age rates been in operation.	Ratio of actual marriage rate (Col. 8) to rate in previous column (10).
	15—	20—	25—	35—	45—	55 and over.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
				BACHELORS.						
1871	6·0	122·4	119·3	43·3	15·3	3·2	61·7	987	62·3	990
1881	4·6	106·8	112·4	40·5	14·3	3·0	55·7	891	62·4	893
1891	3·1	94·7	122·4	43·4	15·2	3·5	54·8	877	63·8	859
1901	2·5	85·9	123·7	44·2	14·6	3·3	54·7	875	66·6	821
1911	2·2	74·8	120·6	44·4	14·9	3·9	52·6	842	69·2	760
1921	3·4	94·4	161·1	61·6	19·7	5·5	62·5	1,000	62·5	1,000
1922	2·9	85·5	156·5	58·7	18·7	5·3	58·1	930	61·7	942
1923	2·6	82·7	155·8	57·1	17·2	4·7	56·3	901	61·1	921
1924	2·5	80·5	160·2	57·1	17·2	4·9	56·0	896	60·7	923
1925	2·4	78·5	163·2	57·6	17·0	5·4	55·7	891	60·6	919
1926	2·6	71·8	158·6	54·5	16·6	4·9	52·6	842	60·4	871
1927	2·8	76·5	180·2	58·1	17·5	6·2	57·8	925	60·5	955
1928	2·9	73·1	183·5	56·8	17·4	6·1	57·0	912	60·3	945
				WIDOWERS.						
1871	11·5	229·0	288·5	181·5	88·3	15·9	65·8	1,475	56·0	1,175
1881	30·6	192·9	246·5	157·8	76·9	16·0	58·2	1,305	56·0	1,039
1891	14·1	153·4	231·7	151·1	74·7	15·5	53·4	1,197	53·7	994
1901	—	132·6	201·7	134·1	65·3	13·5	44·4	996	51·0	871
1911	—	121·6	171·2	117·9	59·4	12·7	36·9	827	47·4	778
1921	14·3	163·7	229·3	155·2	73·5	15·8	44·6	1,000	44·6	1,000
1922	—	136·0	204·7	140·5	65·7	14·3	39·3	881	43·7	899
1923	27·8	139·5	199·9	135·1	63·3	14·1	37·3	834	42·7	874
1924	—	119·6	195·6	132·3	64·4	14·1	36·3	821	42·1	869
1925	—	125·4	181·8	129·3	63·6	14·8	35·8	803	41·5	863
1926	—	88·5	164·7	121·7	59·5	13·5	32·5	729	40·7	799
1927	—	106·9	169·4	128·7	63·5	14·5	34·2	767	40·3	849
1928	—	93·3	157·1	118·8	61·6	14·0	32·0	717	39·7	806
				SPINSTERS.						
1871	26·8	133·7	85·9	30·4	11·9	1·7	63·1	1,164	55·8	1,131
1881	21·5	121·9	80·6	26·3	10·4	1·6	56·9	1,050	55·8	1,020
1891	16·2	112·4	85·7	26·4	10·3	1·7	54·4	1,004	57·1	953
1901	12·9	104·9	88·6	25·3	9·1	1·5	53·0	978	58·6	904
1911	11·2	97·7	91·1	24·4	8·5	1·8	50·6	934	58·0	872
1921	14·8	114·4	100·0	25·6	8·9	2·0	54·2	1,000	54·2	1,000
1922	13·2	108·2	96·6	24·0	8·1	1·8	50·9	939	53·8	946
1923	12·5	108·2	93·6	23·1	7·8	2·0	49·8	919	53·5	931
1924	12·4	109·8	94·9	22·8	8·0	1·8	50·1	924	53·3	940
1925	12·7	110·4	94·1	22·9	7·9	2·1	50·0	923	53·1	942
1926	12·9	104·0	88·7	21·3	7·6	2·0	47·3	873	52·9	894
1927	14·3	114·4	97·3	23·1	8·2	2·4	51·9	958	52·9	981
1928	14·7	112·6	94·7	22·6	7·7	2·3	50·9	939	52·8	964
				WIDOWS.						
1871	55·4	170·5	125·5	55·7	20·8	2·6	21·1	1,172	19·6	1,077
1881	56·6	155·3	114·5	50·2	18·6	2·6	18·2	1,011	18·5	984
1891	49·3	150·4	114·3	50·3	17·8	2·4	16·3	906	16·8	970
1901	54·9	140·7	115·9	48·9	15·6	2·1	14·4	800	15·6	923
1911	30·0	151·2	114·1	48·9	15·6	2·1	12·5	694	13·6	919
1921	36·1	191·4	120·3	50·6	17·6	2·5	18·0	1,000	18·0	1,000
1922	38·8	145·1	98·9	43·3	15·7	2·3	14·5	806	17·0	853
1923	13·0	143·4	86·2	37·7	14·9	2·2	12·5	694	16.3	767
1924	14·3	143·1	79·7	36·9	15·0	2·3	11·9	661	15·9	748
1925	46·2	123·9	69·8	33·6	14·8	2·4	10·9	606	15·5	703
1926	16·4	109·0	62·5	31·0	13·3	2·3	9·8	544	15·1	649
1927	48·4	96·9	62·9	31·6	14·6	2·6	10·1	561	15·0	673
1928	33·3	86·3	60·1	28·6	14·0	2·6	9·5	528	14·7	646

compared with last year's figures, is registered in all but nine counties and is at a maximum in Rutland and Huntingdon, where it reaches 17·9 and 13·5 per cent. respectively.

Marriage-rates by ages which should provide an even more exact statement of the incidence and intensity of marriage are shown in Table XC. In connexion with this table, however, it is necessary to state that the ascertainment of age rates, in years other than those in which the distribution of the population by sex, marital condition and age is definitely known by means of a census enumeration, involves a degree of estimation of population detail in which the margin of error may be not insignificant, owing to the absence of a complete record of the movements between the single, married and widowed sections of the population. Nevertheless, no study of the marriage tendencies in a population can proceed without reference to these factors, and the possibility of the crude rates being made the basis of erroneous inferences justifies the inclusion of the following series of age rates, though those relating to the current inter-censal period must be regarded as provisional approximations to be confirmed or amended in accordance with changes shown by the next census analysis.

It will be observed from the last column of Table XC which compares the actual marriages of each year with a standard number, viz., those expected according to the age rates of 1921 and which makes allowance, therefore, for the changing age constitution of the unmarried population, that for each of the four sections distinguished, bachelors, widowers, spinsters and widows, the frequency of marriage has decreased during the year, the fall being most marked in the case of widowers and widows. But, as stated before, the high rates of last year must be regarded primarily as due to reaction from the abnormal depression of 1926; if comparison is made with the average of the five years 1923–1927 it will be seen that the bachelor and spinster frequencies at 94·5 and 96·4 per cent. of the 1921 standard represent a material rise and that only in respect of widowers and widows (80·6 and 64·6 per cent. of the standard) is the decline confirmed. On this basis of comparison the marriage frequencies of bachelors, widowers and spinsters are markedly higher than they were for a number of years before the war—particularly as regards bachelors —while the reverse is the case amongst widows whose frequencies are incomparably lower than any hitherto recorded for this class in the table.

In the age analysis shown in the earlier columns of Table XC, the only features of note are the continued increases recorded for both bachelors and spinsters under 20 years of age and the further increase in the already high rates for bachelors between the ages of 25 and 35. The maintenance of the marriage-rate of young spinsters at a point well in excess of the corresponding rates of pre-war years, in spite of their diminished opportunities for marriage, has been a feature of the returns of recent years. With bachelors also, the rate for the age period 25–35, at which

practically one half of the marriages of this class take place, is higher than that of any preceding year shown in the table while at all higher ages it is well in excess of pre-war experience.

The decline in the case of widowers and widows affects all age sections except the oldest group of widows. Notwithstanding this the widowers' rates are almost invariably largely in excess of the corresponding bachelors' rates so that it may be said that remarriages in the case of males are relatively more frequent than first marriages. The same has, until recently, been true of females but the maintenance of the rates amongst young spinsters in conjunction with a heavy fall in respect of widows has destroyed the supremacy of the latter at ages below 35 and only at ages above are the widows' rates materially in excess. The age analysis serves to call attention to the misleading nature of the comparison suggested by the aggregate marriages per 1,000 population shown in column 8 of Table XC; owing to the concentration of the single population at the younger ages where marriages are numerous, and the widowed population at the later ages where they are few, the aggregate rate for the single of each sex appears to be vastly in excess of that of the widowed, whereas if allowance be made for the difference in their age constitutions, the relative positions are materially changed and in the case of males is strongly in favour of the widowed.

Table XCI.—England and Wales: Proportions of First Marriages and Re-marriages in 1,000 Marriages, 1918–1928.

Year.	Men.		Women.		Bachelors who married.		Widowers who married.	
	Bachelors.	Widowers.	Spinsters.	Widows.	Spinsters.	Widows.	Spinsters.	Widows.
1918 ..	901	99	894	106	837	64	57	42
1919 ..	897	103	875	125	816	81	59	44
1920 ..	907	93	894	106	839	68	55	38
1921 ..	911	89	909	91	855	56	54	35
1922 ..	913	87	920	80	866	47	54	33
1923 ..	915	85	929	71	875	40	54	31
1924 ..	916	84	932	68	880	36	53	31
1925 ..	916	84	937	63	884	32	53	31
1926 ..	917	83	940	60	887	30	53	30
1927 ..	918	82	942	58	890	28	52	30
1928 ..	921	79	943	57	893	28	50	29

Tables XCII and XCIII continue the series shown in previous issues of the Review classifying the marriages of the year by age, the former giving the mean ages of the persons married in each of the possible combinations and the latter extending the analysis into a number of age-groups.

Table XCII.—England and Wales: Mean Ages at Marriage, 1896–1928.

Males.

Year.	All Bridegrooms.	All Bachelor Bridegrooms.	All Widower Bridegrooms.	Bachelors with Spinsters.	Bachelors with Widows.	Widowers with Spinsters.	Widowers with Widows.
1896–1900 ..	28·38	26·63	44·73	26·35	34·12	41·74	49·72
1901–05 ..	28·52	26·90	45·08	26·62	34·09	42·28	49·88
1906–10 ..	28·76	27·19	45·71	26·93	34·70	42·95	50·64
1911–15 ..	29·01	27·49	46·62	27·18	35·73	43·80	51·37
1916–20 ..	29·77	27·92	46·84	27·42	34·78	44·42	50·25
1921–25 ..	29·18	27·47	47·37	27·08	35·73	44·67	51·87
1911 ..	29·03	27·46	46·42	27·19	35·19	43·49	51·46
1912 ..	29·12	27·56	46·77	27·27	35·75	43·96	51·67
1913 ..	29·11	27·56	46·65	27·25	35·68	43·91	51·35
1914 ..	28·94	27·40	46·66	27·05	35·90	43·79	51·39
1915 ..	28·87	27·49	46·61	27·12	36·15	43·86	50·98
1916 ..	29·70	27·93	47·32	27·47	36·20	44·79	51·07
1917 ..	30·04	28·04	47·71	27·52	35·63	45·22	51·23
1918 ..	30·08	28·14	47·74	27·59	35·43	45·38	50·88
1919 ..	29·81	27·99	45·72	27·46	33·36	43·40	48·85
1920 ..	29·20	27·51	45·73	27·04	33·28	43·31	49·24
1921 ..	29·19	27·48	46·60	27·03	34·35	44·06	50·57
1922 ..	29·21	27·54	46·91	27·12	35·24	44·31	51·20
1923 ..	29·15	27·46	47·34	27·09	35·64	44·60	51·98
1924 ..	29·16	27·45	47·72	27·08	36·31	44·95	52·39
1925 ..	29·17	27·42	48·29	27·07	37·13	45·43	53·19
1926 ..	29·14	27·39	48·53	27·04	37·58	45·75	53·47
1927 ..	29·13	27·39	48·77	27·05	38·10	45·80	53·94
1928 ..	29·10	27·37	49·16	27·03	38·42	46·11	54·45

Females.

Year.	All Brides.	All Spinster Brides.	All Widow Brides.	Spinsters with Bachelors.	Spinsters with Widowers.	Widows with Bachelors.	Widows with Widowers.
1896–1900 ..	26·21	25·14	40·70	24·62	32·64	35·96	44·99
1901–05 ..	26·36	25·37	40·37	24·88	32·99	35·76	45·09
1906–10 ..	26·59	25·63	41·06	25·14	33·63	36·51	45·82
1911–15 ..	26·77	25·75	41·65	25·27	34·23	37·40	46·57
1916–20 ..	27·14	25·81	38·66	25·24	34·30	34·73	44·74
1921–25 ..	26·69	25·57	40·83	25·00	34·79	36·43	46·48
1911 ..	26·80	25·81	41·74	25·32	34·13	37·01	46·63
1912 ..	26·84	25·85	41·89	25·36	34·25	37·44	46·69
1913 ..	26·80	25·78	41·57	25·29	34·23	37·22	46·59
1914 ..	26·68	25·61	41·64	25·12	34·28	37·53	46·57
1915 ..	26·75	25·71	41·42	25·28	34·28	37·78	46·39
1916 ..	27·17	25·91	40·73	25·36	34·58	36·79	45·85
1917 ..	27·27	25·89	39·66	25·28	34·54	35·40	45·48
1918 ..	27·29	25·92	38·84	25·33	34·59	34·82	44·86
1919 ..	27·16	25·81	36·69	25·24	33·77	33·07	43·36
1920 ..	26·79	25·54	37·36	24·99	34·02	33·56	44·14
1921 ..	26·73	25·52	38·83	24·95	34·40	34·83	45·26
1922 ..	26·71	25·57	39·93	25·02	34·53	35·81	45·87
1923 ..	26·66	25·57	40·94	25·01	34·74	36·35	46·66
1924 ..	26·67	25·59	41·69	25·02	34·95	37·19	46·89
1925 ..	26·66	25·59	42·74	25·00	35·34	37·95	47·70
1926 ..	26·63	25·56	43·11	24·97	35·44	38·42	47·90
1927 ..	26·64	25·58	43·81	25·00	35·62	39·05	48·36
1928 ..	26·59	25·53	44·31	24·95	35·77	39·48	48·87

Table XCIII.—England and Wales: Marriages of Bachelors, Spinsters, Widowers and Widows at Various Ages per 1,000 Marriages at All Ages, 1886–1928.

Period.	All Ages.	Under 18 Years.	18–	19–	20–	Under 21 Years.	21–	25–	30–	35–	40–	45–	50–	55 and up.	Age not stated.
						Bachelors.									
1886–90..	1,000	0	4	20	47	71	424	309	96	33	13	6	3	2	43
1891–95..	1,000	0	3	17	43	63	415	333	108	37	14	6	3	2	19
1896–1900	1,000	0	3	15	39	57	411	346	110	39	15	6	3	2	11
1901–05..	1,000	0	3	13	35	51	390	360	122	41	16	7	3	2	8
1906–10..	1,000	0	3	11	30	44	370	372	132	46	17	8	3	2	6
1911–15..	1,000	0	3	12	28	43	350	373	139	53	21	9	4	3	5
1916–20..	1,000	1	6	13	27	47	332	354	144	62	30	15	6	4	6
1921–25..	1,000	1	4	13	30	48	355	360	133	53	24	12	5	5	5
1921 ..	1,000	1	4	15	33	53	350	356	136	55	24	12	5	4	5
1922 ..	1,000	1	4	14	30	49	349	361	136	54	24	12	5	5	5
1923 ..	1,000	1	4	13	29	47	358	359	133	53	24	12	5	4	5
1924 ..	1,000	1	4	13	27	45	361	361	132	51	23	11	6	5	5
1925 ..	1,000	0	4	12	28	44	360	367	129	50	23	11	6	5	5
1926 ..	1,000	1	4	13	29	47	357	372	125	49	22	12	6	5	5
1927 ..	1,000	1	4	13	28	46	354	383	122	46	21	11	6	6	5
1928 ..	1,000	1	4	14	29	48	348	395	117	44	21	11	6	6	4
						Spinsters.									
1886–90..	1,000	9	37	72	97	215	417	219	62	23	10	5	2	1	46
1891–95..	1,000	7	31	66	94	198	425	241	70	25	11	5	2	1	22
1896–1900	1,000	6	27	59	89	181	434	253	74	26	11	5	2	1	13
1901–05..	1,000	5	23	53	82	163	428	272	79	28	12	5	2	1	10
1906–10..	1,000	5	21	48	75	149	420	284	87	30	12	6	2	2	8
1911–15..	1,000	6	23	47	70	146	402	292	94	34	14	7	3	2	6
1916–20..	1,000	6	23	48	72	149	402	275	94	39	17	9	4	3	8
1921–25..	1,000	7	25	51	72	155	411	280	87	32	14	8	4	3	6
1921 ..	1,000	7	27	54	76	164	406	274	86	33	15	8	4	3	7
1922 ..	1,000	7	26	51	73	157	404	282	88	33	15	8	3	3	7
1923 ..	1,000	7	25	49	72	153	412	279	87	33	14	8	4	3	7
1924 ..	1,000	7	25	49	70	151	414	281	87	32	14	8	4	3	6
1925 ..	1,000	8	25	49	70	152	413	281	86	32	14	8	4	4	6
1926 ..	1,000	9	28	50	70	157	410	279	86	32	14	8	4	4	6
1927 ..	1,000	9	27	50	69	155	412	282	84	31	14	8	4	4	6
1928 ..	1,000	11	28	51	71	161	411	281	81	31	14	8	4	4	5

Period.	All Ages.	Under 21 Years.	21–	25–	30–	35–	40–	45–	50–	55–	60–	65–	70 and up.	Age not stated.
						Widowers.								
1886–90..	1,000	0	13	81	133	151	139	120	94	70	53	27	15	104
1891–95..	1,000	0	12	76	132	153	148	126	106	74	55	29	18	71
1896–1900	1,000	0	10	73	131	158	150	136	109	84	56	30	19	44
1901–05..	1,000	0	10	68	130	155	152	136	116	83	62	32	20	36
1906–10..	1,000	0	8	61	123	153	152	141	119	90	62	37	24	30
1911–15..	1,000	0	7	53	109	151	150	146	125	97	68	41	30	23
1916–20..	1,000	0	7	54	105	138	151	155	130	101	70	39	26	24
1921–25..	1,000	0	8	55	109	137	135	136	126	104	79	51	36	24
1921 ..	1,000	0	8	61	116	142	143	138	120	99	73	46	31	23
1922 ..	1,000	0	8	55	115	142	138	139	121	102	74	48	34	24
1923 ..	1,000	0	8	55	110	140	133	136	124	102	80	51	37	24
1924 ..	1,000	0	7	54	107	129	134	135	132	104	82	52	40	24
1925 ..	1,000	0	8	50	98	128	127	132	133	113	87	58	41	25
1926 ..	1,000	0	6	48	96	123	131	136	131	112	88	59	44	26
1927 ..	1,000	0	6	51	91	121	129	132	135	115	87	63	47	23
1928 ..	1,000	0	6	50	89	115	123	136	133	114	91	70	49	24
						Widows.								
1886–90..	1,000	1	30	119	164	173	145	117	73	46	26	10	3	93
1891–95..	1,000	1	27	115	170	177	157	119	78	47	29	10	4	66
1896–1900	1,000	1	26	113	175	188	157	127	81	50	28	11	3	40
1901–05..	1,000	1	28	122	182	190	158	118	78	47	29	11	4	32
1906–10..	1,000	1	23	106	177	192	160	129	82	52	30	14	6	28
1911–15..	1,000	1	21	98	167	193	171	135	85	51	32	16	11	19
1916–20..	1,000	3	67	189	191	162	126	98	64	41	24	13	6	16
1921–25..	1,000	1	25	134	200	182	138	109	77	52	33	19	11	19
1921 ..	1,000	1	37	179	222	178	122	93	62	42	25	15	8	16
1922 ..	1,000	1	25	148	212	185	135	102	72	49	29	16	8	18
1923 ..	1,000	1	23	125	200	182	140	113	79	53	34	19	12	19
1924 ..	1,000	1	20	104	188	185	150	123	83	56	37	20	14	19
1925 ..	1,000	1	17	89	170	180	152	126	98	65	44	24	13	21
1926 ..	1,000	1	16	84	158	189	153	127	97	66	45	26	17	21
1927 ..	1,000	0	14	75	149	178	159	136	100	72	50	31	17	19
1928 ..	1,000	1	12	76	142	170	156	134	107	79	53	34	18	18

Marriages of Minors.—Of the males married during the year, 13,198, or 4·35 per cent., were under the age of 21, and of the females 45,951, or 15·15 per cent., as compared with 4·14 per cent., and 14·61 per cent. last year respectively. Females, who have always greatly outnumbered the males in this class—in the present year the ratio is about $3\frac{1}{2}$ to 1—naturally show the highest rates and the greatest changes in the rate; they formed 18·8 per 1,000 of the unmarried females aged 15–21 in 1911, were 26·6 in 1920, and are now 22·1, while the corresponding ates for males were 5·5, 8·8 and 6·2 per 1,000 respectively; both the rapid post-war rise and the subsequent decline in the rate generally follows the experience of adults, but while the adult marriage-rate shows a decline from that of last year, in the case of minors, an increase is recorded for each of the sexes.

Comparative figures are shown in Table XCV for the period back to 1901, before which the age group 15–21 was not identified in the population returns; an indication of the trend of youthful marriage-rates in earlier periods may be gained from the general age analyses in Table XCIV.

Table XCIV.—England and Wales: Minors Married per 1,000 Marriages at all Ages, 1876–1928.

Year.	Husbands.	Wives.	Year.	Husbands.	Wives.
1876–80 ..	77·8	217·0	1916 ..	36·2	129·1
1881–85 ..	73·0	215·0	1917 ..	41·7	134·2
1886–90 ..	63·2	200·2	1918 ..	42·6	129·0
1891–95 ..	56·2	182·6	1919 ..	43·7	129·4
1896–1900..	51·2	168·0	1920 ..	46·8	142·9
1901–05 ..	46·3	153·1	1921 ..	48·2	149·2
1906–10 ..	40·3	139·4	1922 ..	44·4	144·4
1911–15 ..	39·2	136·6	1923 ..	42·5	142·9
1916–20 ..	42·6	133·3	1924 ..	40·4	140·3
1921–25 ..	43·3	143·9	1925 ..	40·6	142·3
1912 ..	39·2	135·4	1926 ..	43·3	147·5
1913 ..	42·1	143·8	1927 ..	41·4	146·1
1914 ..	41·6	142·5	1928 ..	43·5	151·5
1915 ..	34·8	129·8			

Table XCV.—England and Wales: Annual Marriage-rate per 1,000 Unmarried and Widowed Persons in the age group 15–21 at each period 1901 to 1928.

Year.	Males.		Females.	
	Rate.	Ratio to 1921.	Rate.	Ratio to 1921.
1901	6·7	87	21·6	92
1911	5·5	71	18·8	80
1920	8·8	114	26·6	114
1921	7·7	100	23·4	100
1922	6·4	83	20·9	89
1923	5·9	77	20·0	85
1924	5·6	73	19·8	85
1925	5·6	73	20·0	85
1926	5·6	73	19·7	84
1927	6·0	78	21·6	92
1928	6·2	81	22·1	94

The proportions of males and females marrying under age are summarised for regions and counties in Tables XCVI and LXXXIX. Much of the variation there shown is but a reflex of the incidence of the general marriage-rate (Tables LXXXVIII and LXXXIX) and regard must necessarily be had to the latter in considering how far the former provides evidence of local custom regarding early marriage. For example the highest male rate for 1928 shown in Table XCVI is that of 7·7 per 1,000 in London which is over 24 per cent. above the average for the country at large ; reference to Table LXXXVIII, however, shows that the corresponding rate for all ages in this area was more than 27 per cent. in excess, so that under-age marriages, though apparently more numerous than elsewhere, may from this point of view be regarded as subnormal in frequency. Examined in this way the table does appear to indicate that early marriages are relatively more frequent in the North than in other sections and that in this respect conditions are little changed from those of pre-war years.

Table XCVI.—Marriage-rate of Minors per 1,000 Marriageable Population aged 15–21 in Geographical Sections of the Country, 1921 and 1928.

	Males.				Females.			
	Rate per 1,000 Marriageable Population 15–21.		Ratio of local rate to England and Wales rate.		Rate per 1,000 Marriageable Population 15–21.		Ratio of local rate to England and Wales rate.	
	1921.	1928.	1921.	1928.	1921.	1928.	1921.	1928.
England and Wales.	7·7	6·2	1,000	1,000	23·4	22·1	1,000	1,000
North	9·3	6·6	1,208	1,065	26·1	22·7	1,115	1,027
Midlands ..	7·5	6·3	974	1,016	22·1	21·6	944	977
South (including London)	6·1	6·2	792	1,000	20·8	22·0	889	995
Wales ..	6·7	4·2	870	677	26·7	22·4	1,141	1,014
London ..	7·8	7·7	1,013	1,242	22·2	22·5	949	1,018

Buildings in which Marriages may be Solemnized.—At the end of the year 1928 the numbers of churches or chapels of the Established Church and of the Church in Wales and of registered buildings in which marriages could be legally solemnized, were as follows :—

Established Church and Church in Wales	16,347
All other religious denominations ..	19,563
Total	35,910

The increase upon the numbers at the end of the previous year was :—Established Church and Church in Wales 26, other

religious denominations 192. The number of these buildings belonging to the various denominations is shown for each registration county in Table Q.

By the Acts 15 and 16 Vict. c. 36, and 18 and 19 Vict. c. 81, it was enacted that all places of religious worship not being churches or chapels of the Established Church, should, if the congregations desired, be certified to the Registrar-General, certification for public worship being a necessary preliminary to the registration of a building for the solemnization of marriages.

The number of places of meeting for religious worship on the official register on 31st December, 1928, and the number of buildings registered for the solemnization of marriages are shown in Table XCVII.

Table XCVII.

Denomination.	Buildings certified to the Registrar-General as meeting-places for Religious Worship.	Buildings registered for the Solemnization of Marriages.*
Roman Catholics	1,753	1,630
Wesleyan Methodists	7,690	4,718
Congregationalists	3,421	3,138
Baptists	3,238	2,932
Primitive Methodists	4,298	2,177
United Methodist Church	1,980	1,343
Calvinistic Methodists	1,366	1,062
Presbyterians	445	448
Unitarians	184	198
New Church	57	60
Catholic Apostolic Church	61	47
Countess of Huntingdon's Connexion	45	40
Salvation Army	1,289	278
Society of Friends	414	†
Jews	275	†
Other Denominations	3,854	1,492
All Denominations	30,370	19,563

* Of these buildings nearly 1,000 were certified before 1852, as Places of Meeting for Religious Worship to some other Authority than the Registrar-General and therefore are not included in the preceding column.

† It is not necessary for buildings to be registered for the solemnization of Quaker or Jewish marriages. Under section 31 of the Births, Deaths, and Marriages Registration Act (1836) Registering Officers of the Society of Friends and Secretaries of Jewish Synagogues who have been certified to the Registrar-General record the marriages in each case.

The Marriage Act, 1898, provided that under specified conditions marriages might be solemnized in registered buildings in the presence of duly authorised persons without the attendance of a Registrar of Marriages. The governing bodies of some of the registered buildings have availed themselves of this provision, and at the end of the year 1928, the number of such buildings which had been brought under the operation of the Act, and so

remained, was 5,915 out of the total of 19,563. The numbers of these buildings, and the denominations to which they belonged, were as follows :—

2,455 Wesleyan Methodists.
851 Congregationalists.
940 Primitive Methodists.
596 Baptists.
513 United Methodist Church.
149 Calvinistic Methodists.
411 Other Denominations and Unsectarian.

5,915 All Denominations.

Divorces and Remarriages of Divorced Persons. — The annual numbers of marriages dissolved or annulled are shown in Table O and again in the table below in terms of the persons involved, for each of the past ten years and the preceding quinquennia back to 1876–80.

During the year 1928, 3,927 divorces and 91 annulments were obtained, the number of persons involved being twice these figures, or a total of 4,018 of each sex. The considerable increase of nearly 26 per cent. in the annual numbers of judicially terminated marriages makes the 1928 total a record for a single year. The nearest approach to it was in 1921 during the inevitable social readjustments which followed the termination of the war.

Table XCVIII.—England and Wales : Annual Number of Persons Divorced, and of Divorced Persons who Remarried, 1876–1928.

Period.	Number of Persons Divorced.	Annual Number of Divorced Persons who remarried.							
		Total.	Men.	Women.	Divorced men marrying spinsters.	Divorced men marrying widows.	Divorced men and women intermarrying.	Divorced women marrying bachelors.	Divorced women marrying widowers.
1876–80 ..	554	104	56	48	42	12	4	31	15
1881–85 ..	671	128	68	60	53	12	6	42	15
1886–90 ..	707	169	80	89	65	11	8	65	20
1891–95 ..	744	214	110	104	89	15	12	75	23
1896–1900 ..	980	345	172	173	138	24	20	126	37
1901–05 ..	1,126	509	262	247	205	38	38	181	47
1906–10 ..	1,247	693	356	337	276	53	54	253	57
1911–15 ..	1,312	820	411	409	330	50	62	309	69
1916–20 ..	3,115	1,264	683	581	525	127	62	439	111
1921–25 ..	5,467	3,050	1,708	1,342	1,316	295	194	976	269
1918..	2,222	885	495	390	390	81	48	288	78
1919..	3,308	1,352	708	644	538	142	56	510	106
1920..	6,180	2,370	1,314	1,056	981	272	122	795	200
1921..	7,044	2,878	1,592	1,286	1,182	330	160	939	267
1922..	5,176	3,374	1,913	1,461	1,457	360	192	1,062	303
1923..	5,334	3,008	1,679	1,329	1,307	279	186	1,002	234
1924..	4,572	2,903	1,627	1,276	1,267	275	170	931	260
1925..	5,210	3,088	1,729	1,359	1,367	229	266	944	282
1926..	5,244	3,124	1,710	1,414	1,325	231	308	995	265
1927..	6,380	3,576	1,924	1,652	1,509	244	342	1,133	348
1928..	8,036	4,125	2,268	1,857	1,764	302	404	1,299	356

Average

From Table XCVIII it will be seen that the number of persons who on remarriage described themselves as divorced has also increased, but at a considerably lower rate. The table brings out the contrast between the pre-war and post-war position, both in regard to the absolute numbers of divorced persons remarrying and also in regard to the proportions of the sexes involved, for whereas formerly the numbers of males and females remarrying were about equal, there is now considerable male excess. But it must be borne in mind that these numbers may understate the facts, owing to misdescription of status in the registers.

In Table P are given certain particulars concerning the marriages in respect of which suits for dissolution or annulment were commenced during the year.

3,280 Petitions were filed at the Principal Registry in London and 770 at 23 District Registries. In respect of the former it will be seen that the most frequent duration of marriage at the date of the commencement of the proceedings is from 5–10 years with an average of 223 for each of those years of duration, but the maximum is not of particular significance, for this period only accounts for 34 per cent. of the cases, there being 14 per cent. of shorter duration, while in 52 per cent. the marriages have subsisted for 10 years or more. More than 41 per cent. of the marriages in question were childless, and in a further 31 per cent. there was one child only.

LIVE BIRTHS.

The live births registered during 1928 numbered 660,267 corresponding to a birth-rate of 16·7 per 1,000 of the population living.

The number of births is 6,095 more than those of 1927, an increase of 0·93 per cent.

This inconsiderable increase is noteworthy in that it is the first of its kind to be reported since 1920, the peak of the post-war boom, but it cannot be regarded as of any permanent significance since it is almost certainly to be associated with fluctuating social conditions of the past few years. One of the immediate effects of the coal dispute and general strike of 1926, it will be remembered, was a sudden drop in the number of new marriages which was succeeded by an abnormally high marriage rate in 1927, and a restoration to a more normal position in the present year. The same movements are palely reflected in the birth series at an appropriately later date and in relation to a generally falling series instead of the more stable level of marriages; the current year's increase in the birth-rate can be regarded as nothing more than a reaction from the more than usually depressed rate of last year and it will be safer to average the two years, as was done for the marriages of 1926 and 1927, in considering their general relation with the past or the future.

From this point of view there would appear to be little departure so far from the steady decline experienced since 1920 and this inference is confirmed by the births reported for 1929 by which the downward movement is carried a stage further. Any observable diminution in the declining tendency is only of the slightest character so that it is impossible to predict the level it will ultimately reach or when this limit will be attained.

The birth-rate in this country attained its highest values during the period 1865–1880, when it exceeded 35 per 1,000 population, and from that time it diminished by gradual and practically continuous stages to 23·8 in 1914; it is now 16·7 per 1,000, less than half the maximum figure of 36·3 recorded in 1876, and having regard to current economic and industrial conditions appears likely for some time to remain low in relation to all earlier periods for which we have reliable records.

Table XCIX.—British and Foreign Birth-Rates (living born) per 1,000 total population.

Year.	England and Wales.	Scotland.	Northern Ireland.	Irish Free State.	Austria.	Belgium.	Czecho Slovakia.	Denmark.	Finland.	France.	Germany.	Hungary.	Italy.
1911	24·4	25·6	23·3		*31·4	22·9	—	26·7	29·1	*18·7	*28·6	*34·7	*31·5
1912	24·0	25·9	23·0		*31·3	22·6	—	26·6	29·1	*18·9	*28·3	*35·8	*32·4
1913	24·1	25·5	22·8		*29·7	22·4	—	25·6	27·2	*18·2	*27·5	*34·3	*31·7
1914	23·8	26·1	22·6		23·3	20·4	—	25·6	26·9	*17·9	*26·8	*34·5	*31·1
1915	21·8	23·9	22·0		18·4	16·1	—	24·2	25·4	*11·6	*20·4	*23·6	*30·5
1916	21·0	22·9	21·0		14·7	12·9	—	24·4	24·1	*9·5	*15·2	*16·8	*24·0
1917	17·8	20·3	19·8		13·9	11·3	—	23·7	24·3	*10·5	*13·9	*16·0	*19·5
1918	17·7	20·5	20·0		14·1	11·3	—	24·1	23·8	*12·2	*14·3	*15·3	*18·1
1919	18·5	21·7	20·0		18·0	16·3	22·4	22·6	19·2	*12·6	20·0	28·9	*21·4
1920	25·5	28·1	22·2		22·4	22·1	26·6	25·4	25·3	21·3	25·9	32·4	*31·8
1921	22·4	25·2	20·2		22·9	21·8	29·0	24·0	24·3	20·7	25·3	31·6	*30·3
1922	20·4	23·5	23·3	19·5	23·2	20·4	28·1	22·2	23·4	19·3	22·9	30·6	30·2
1923	19·7	22·8	23·9	20·5	22·5	20·4	27·3	22·3	23·7	19·1	21·0	29·2	29·4
1924	18·8	21·9	22·7	21·1	21·7	19·9	25·8	21·8	22·4	18·7	20·5	26·8	28·4
1925	18·3	21·3	22·0	20·8	20·6	19·8	25·1	21·0	22·3	18·9	20·7	28·3	27·8
1926	17·8	20·9	22·5	20·6	19·2	19·0	24·6	20·5	21·7	18·8	19·5	27·3	27·2
1927	16·6	19·8	21·3	20·3	17·8	18·3	23·3	19·6	21·2	18·1	18·4	25·7	26·9
1928	16·7	19·8	20·8	20·1	17·5	18·3	23·3	19·6	21·5	18·2	18·6	25·6	26·1

Year.	Netherlands.	Norway.	Portugal.	Roumania.	Spain.	Sweden.	Switzerland.	Australia.	Canada.	New Zealand.	South Africa (Whites).	U.S.A. (Birth Registration Area).	Japan.
1911	27·9	25·7	—	*42·3	31·4	24·0	24·2	27·2	—	26·0	32·2	—	34·0
1912	28·1	25·4	—	*43·3	31·6	23·8	24·2	28·6	—	26·5	32·2	—	33·3
1913	28·3	25·1	31·9	*42·1	30·4	23·2	23·2	28·2	—	26·1	31·7	—	33·2
1914	28·3	25·1	—	*42·8	29·8	22·9	22·4	27·9	—	26·0	30·2	—	33·7
1915	26·3	23·6	—	*40·5	30·8	21·6	19·5	27·1	—	25·3	29·3	25·1	33·1
1916	26·6	24·2	31·0	—	28·9	21·2	18·9	26·6	—	25·9	29·3	25·0	32·7
1917	26·2	25·1	30·3	—	28·8	20·9	18·5	26·3	—	25·7	28·5	24·7	32·3
1918	25·0	24·6	28·6	—	29·1	20·3	18·7	25·0	—	23·4	28·6	24·6	32·2
1919	24·4	22·7	26·0	—	28·3	19·8	18·6	23·5	—	21·4	26·9	22·3	31·6
1920	28·3	26·1	33·6	33·2	30·0	23·6	20·9	25·5	26·6	25·1	29·0	23·7	36·2
1921	27·4	24·0	30·3	38·2	30·4	21·5	20·8	25·0	26·4	23·3	28·4	24·3	35·1
1922	25·9	23·1	33·6	37·2	30·5	19·6	19·6	24·7	25·2	23·2	27·5	22·5	34·2
1923	26·0	22·5	34·1	36·4	30·6	18·8	19·4	23·8	23·9	21·9	26·7	22·4	34·9
1924	25·1	21·1	34·1	36·7	30·0	18·1	18·8	23·2	23·7	21·6	26·8	22·6	33·8
1925	24·2	20·0	34·2	35·2	29·4	17·5	18·4	22·9	23·0	21·2	26·5	21·4	34·9
1926	23·8	19·3	—	34·8	29·9	16·9	18·2	22·0	24·8	21·1	26·2	20·6	34·8
1927	23·1	18·2	—	34·1	28·6	16·1	17·4	21·7	24·6	20·3	26·0	20·6	33·6
1928	23·3	—	—	—	29·6	16·2	17·3	21·3	24·5	19·6	25·8	19·7	34·4

* Pre-war area.

The recent history of the birth-rate in this country may be compared with those of a number of other countries of which particulars are at hand by reference to Table XCIX. The record extends over the period from 1911 to 1928 (for earlier years, *see* the Registrar-General's Annual Report for 1910) and covers therefore not only the years of the war period itself when the movements were quite abnormal, but a number of both earlier and later years sufficient to indicate the more prolonged changes which may probably be associated with the events of that period.

Broadly speaking the birth-rate in all the countries listed in the table has followed a common course throughout the period identified. Up to the outbreak of war the years were, on the whole, uneventful, the only observable tendency being that of a slow decline in most countries which was but a normal extension of the more prolonged fall of earlier decades. Then followed a series of unprecedented changes the violence of which destroyed all continuity with previous records and affected all countries both belligerent and neutral, the difference being one of degree only in that the disturbance was greatest among European belligerents. First there was a rapid acceleration of the previous slow decline which lasted till 1918 or 1919 when the rates touched levels never before experienced and then, with the cessation of hostilities an even more sudden rebound to new maxima which were everywhere reached in 1920 except in Austria, where the peak occurred two years later. The high rates of 1920 were immediately followed by a fresh reaction in the shape of a new decline which, sharp at first, in most countries continued with occasional interruption down to last year; the movements in the past 12 months are not quite so consistently downward in character but further time must elapse before it will be possible to make comparisons of any lasting value.

In all the countries listed except France and Japan the current rates show a large fall in comparison with pre-war experience, a fall which in respect of England and Wales is the more serious since the position of this country in relation to that of others was already a low one before the war, while to-day it is lower than any country save Sweden. The case of France is somewhat exceptional in that the current rate is at about the same level as it was before the war, so that instead of being outstandingly the worst in the series as formerly, it now ranks above Austria, Switzerland, England and Wales and Sweden.

The crude birth-rate, or ratio of births to population of all ages, is a convenient form of statement when the object in view is to record the aggregate effect of all the various factors governing reproduction. It sums up the effects of all the influences governing the rate at which the community is reproducing itself and is, therefore, in conjunction with the corresponding form of mortality statement, the crude death-rate, the appropriate means of measuring natural increase. The number of births in the country, however, depends mainly upon the number of married women at

the reproductive ages, and as they form less than one-eighth of the total population the variation of their numbers and ages over a period of time may be different from that of the whole population, in which case the crude birth-rates form but an imperfect measure of the changes in fertility, *i.e.*, of the rate of reproduction in proportion to the opportunity of reproduction. In the absence of any knowledge of the constitution of the general

Table C.—England and Wales.—Birth-rates and Fertility, 1871–1928.

	Births per 1,000 Total Population.	Ratio to 1921.	Births per 1,000 Married Women, 15-45.	Ratio to 1921.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
Legitimate Births.					
1871 (1870–72) ..	33·3	1,556	292·5	1,659	1,504
1881 (1880–82) ..	32·3	1,509	286·0	1,622	1,481
1891 (1890–92) ..	29·4	1,374	263·8	1,496	1,382
1901 (1900–02) ..	27·5	1,285	235·5	1,336	1,250
1911 (1910–12) ..	23·4	1,093	197·4	1,120	1,102
1921	**21·4**	**1,000**	**176·3**	**1,000**	**1,000**
1922	19·5	911	160·7	912	909
1923	18·9	883	155·3	881	877
1924	18·1	846	148·4	842	835
1925	17·5	818	143·5	814	805
1926	17·0	794	139·8	793	783
1927	15·9	743	130·8	742	732
1928	16·0	748	131·0	743	730

	Births per 1,000 Total Population.	Ratio to 1921.	Births per 1,000 Unmarried Women, 15-45.	Ratio to 1921.	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
Illegitimate Births.					
1871 (1870–72) ..	1·96	1,922	17·0	2,152	2,051
1881 (1880–82) ..	1·65	1,618	14·1	1,785	1,688
1891 (1890–92) ..	1·31	1,284	10·5	1,329	1,247
1901 (1900–02) ..	1·12	1,098	8·5	1,076	1,008
1911 (1910–12) ..	1·03	1,010	7·9	1,000	968
1921	**1·02**	**1,000**	**7·9**	**1,000**	**1,000**
1922	0·89	873	7·0	886	937
1923	0·82	804	6·5	823	863
1924	0·78	765	6·2	785	826
1925	0·74	725	5·9	747	790
1926	0·76	745	6·0	759	810
1927	0·74	725	5·9	747	795
1928	0·75	735	6·0	759	815

	Births per 1,000 Total Population.	Ratio to 1921.	—	—	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.
All Births.					
1871 (1870–72) ..	35·3	1,576	—	—	1,527
1881 (1880–82) ..	34·0	1,518	—	—	1,490
1891 (1890–92) ..	30·7	1,371	—	—	1,376
1901 (1900–02) ..	28·6	1,277	—	—	1,238
1911 (1910–12) ..	24·4	1,089	—	—	1,095
1921	**22·4**	**1,000**	—	—	**1,000**
1922	20·4	911	—	—	910
1923	19·7	879	—	—	876
1924	18·8	839	—	—	834
1925	18·3	817	—	—	804
1926	17·8	795	—	—	784
1927	16·6	741	—	—	734
1928	16·7	746	—	—	733

population the crude rate is often used as an index of fertility, but always on the implied assumption of a fixed proportion of potential mothers, an assumption which may only reasonably be made in respect of short periods of adjacent years.

In order to exclude the effect of varying population constitution and so obtain a truer statement of fertility change, the method of standardization, described in the 1922 Review and adopted in connexion with the statistics of the years 1922–1927, has been continued to cover the experience of 1928. It consists in (1) adopting the fertility curve or fertility ratios experienced in 1921 as a standard, (2) applying them age by age to the appropriate women in the population in question—for the years subsequent to 1921 estimates of such women have been made for the purpose—and so obtaining a standard number of births, the numbers which would have occurred had the standard birth-rates been operating, and (3) calculating the ratio of the actual births recorded to the standard or expected number; the ratio of actual to expected is thus an index, comparing in an integral form the actual experience of each period or year with a common standard and, therefore, with one another.

Standardized comparisons are given in the last column of Table C both for census years prior to 1921 and for individual years of the present inter-censal period and the results are contrasted in that table with the more familiar and more approximate comparisons given by the cruder birth-rates, whether calculated per 1,000 total population or per 1,000 married women between ages 15 and 45. Thus, in 1871, 1,504 legitimate births were recorded for every 1,000 that would have occurred under the standard fertility rates, the 1921 experience being in the aggregate only two-thirds of that of 50 years ago. From that time the rates diminished steadily and progressively as shown by the comparative figures, which are 1,481, 1,382, 1,250, and 1,102 at successive ten-year intervals between 1881 and 1911. Since 1921 the even more rapid drop, commented upon in dealing with the crude rates, is shown by the further reductions in the index which is shown for 1928 as 730, less than three-fourths of the 1921 standard. It will be observed that over the earlier years shown in the table the decrease in fertility was overstated by the crude rates, and that since 1911 the tendency has been in the other direction.

Illegitimate Births.—The live births registered during 1928 include 29,702 of illegitimate children, an increase of 679 on the number in 1927, coincident with the increase of 6,095 in total births. Illegitimate births have thus increased by 2·3 per cent., and legitimate births by 0·9 per cent. As a result of these changes, the proportion of illegitimate to total births has risen slightly from 4·44 per cent. last year to 4·50 per cent., figures which compare with the minimum of 3·95 per cent. recorded for the period 1901–1905 and the maximum of 6·26 per cent. attained in 1918.

In addition to the crude rate comparison an attempt has been made in Table CI to allow for the age incidence of the potential mothers in respect of illegitimate as well as legitimate births. The standard age factors employed are, as described in the 1922 Review, of less authority than those in respect of legitimate fertility, and serve mainly to complete the tables on the lines followed and already described for married women.

Birth-rates of Different Parts of the Country.—The birth-rates, total and illegitimate, of individual administrative areas tabulated in Table E are summarized in Table CI.

The method employed in earlier paragraphs for comparing the fertility of England and Wales in different years by the use of a standard fertility curve applies equally well of course to the comparison of fertility in different sections of the population of which the sex, age and marital condition constitution is known, and the crude rate comparisons are supplemented in this table by the addition of a series of figures in which variations in birth-rates due solely to differences in the age and marital condition proportions of the several populations have been, as far as possible, eliminated.

The first three columns of Table CI show for each of the specified divisions of the country the crude birth-rate of 1921, the ratio of the crude rate to that of the country as a whole, and the corresponding ratio obtained by the use of the standard fertility rates in conjunction with the census populations of that year. For later years local populations analysed by age and marital condition are not available, and an approximate correction to the crude rate comparison of 1928 shown in col. 5 has been made as follows :—The difference between cols. 2 and 3 has been regarded as a measure of the variation due to the constitution of the population and in the form of a factor, viz., col. 3÷col. 2, has been applied to the crude 1928 birth ratio to obtain the corrected ratio shown in col. 6. The implied assumption that the constitutions of the local populations remain in constant relation to one another could not be maintained over a long period of time, but for the years of an inter-censal period corrected ratios obtained in this way will probably provide a truer picture of the incidence of fertility than that shown by the unadjusted crude rates.

For 1928 the birth changes in the geographical regions and types of area shown in the table are in consonance with the small increase for the country as a whole and are generally of no significance. In the majority of the divisions the rate has remained stationary or increased very slightly, the greatest rises both in legitimate and illegitimate rates being those recorded for the Urban Districts of Wales, the former having increased from 17·0 to 17·5 per 1,000 and the latter from 0·64 to 0·70 per 1,000 total population.

Table CI.—England and Wales and Sections* of the Country.—Birth-rates, 1921 and 1928.

	1921.			1928.		
	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales. (Crude Rates.)	Ratio of Actual Births to those which would have occurred had the Standard age rates been operating.	Birth-rate per 1,000 Total Population.	Ratio to Rate for England and Wales. (Crude Rates.)	Ratio Corrected to Exclude Variations due to Differing Age and Marital Condition Incidence.†
	(1)	(2)	(3)	(4)	(5)	(6)
All Births—						
England and Wales	**22·4**	**1,000**	**1,000**	**16·7**	**1,000**	**1,000**
London	22·1	987	957	16·2	970	941
County Boroughs	23·5	1,049	1,004	17·4	1,042	997
Other Urban Districts ..	22·1	987	978	16·2	970	961
Rural Districts	21·4	955	1,060	16·7	1,000	1,110
Northern Counties	23·7	1,058	1,025	17·5	1,048	1,015
County Boroughs	24·0	1,071	1,026	17·9	1,072	1,027
Other Urban Districts ..	23·1	1,031	996	16·6	994	960
Rural Districts	23·7	1,058	1,099	17·9	1,072	1,114
Midland Counties	22·2	991	999	16·9	1,012	1,020
County Boroughs	23·6	1,054	1,000	17·4	1,042	989
Other Urban Districts ..	21·6	964	964	16·5	988	988
Rural Districts	21·2	946	1,054	16·9	1,012	1,128
Southern Counties (including London).	20·4	911	941	15·5	928	959
County Boroughs	19·8	884	887	15·4	922	925
Other Urban Districts ..	18·9	844	898	14·6	874	930
Rural Districts	19·1	853	994	15·3	916	1,067
Wales	25·0	1,116	1,099	17·4	1,042	1,026
County Boroughs	24·9	1,112	1,035	17·7	1,060	987
Other Urban Districts ..	26·7	1,192	1,101	17·5	1,048	968
Rural Districts	22·6	1,009	1,143	16·9	1,012	1,146
Illegitimate Births—						
England and Wales	**1·02**	**1,000**	**1,000**	**0·75**	**1,000**	**1,000**
London	0·89	873	788	0·81	1,080	975
County Boroughs	1·09	1,069	1,034	0·77	1,027	993
Other Urban Districts ..	0·96	941	944	0·68	907	910
Rural Districts	1·07	1,049	1,197	0·82	1,093	1,248
Northern Counties	1·12	1,098	1,091	0·78	1,040	1,033
County Boroughs	1·15	1,127	1,091	0·81	1,080	1,046
Other Urban Districts ..	1·04	1,020	1,030	0·68	907	916
Rural Districts	1·17	1,147	1,257	0·86	1,147	1,257
Midland Counties	1·00	980	992	0·71	947	959
County Boroughs	1·04	1,020	975	0·69	920	879
Other Urban Districts ..	0·91	892	869	0·66	880	857
Rural Districts	1·07	1,049	1,234	0·81	1,080	1,270
Southern Counties (including London).	0·92	902	877	0·77	1,027	999
County Boroughs	1·04	1,020	1,030	0·83	1,107	1,118
Other Urban Districts ..	0·91	892	864	0·70	933	904
Rural Districts	0·92	902	1,029	0·74	987	1,126
Wales	1·03	1,010	1,108	0·75	1,000	1,097
County Boroughs	0·77	755	751	0·57	760	756
Other Urban Districts ..	1·02	1,000	1,134	0·70	933	1,058
Rural Districts	1·22	1,196	1,320	0·96	1,280	1,413

* For constitution of Geographical Sections of the Country *see* page 172.

† Col. (6) has been obtained by multiplying col. (5) by the correcting factor referred to in the text, viz., col. 3÷col. 2.

The modification of the usual order, which has been maintained with great constancy for many years, is shown in the following table, which states the birth-rate of each section as a percentage of that of the whole country for each of the past ten years.

Table CII.—Birth-rate of Different Sections of the Country per cent. of that of England and Wales, 1919–28.

——	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
North ..	105	103	106	104	104	106	105	106	104	105
Midlands..	97	100	99	100	99	99	99	99	102	101
South ..	93	96	91	94	94	92	92	92	93	93
Wales ..	112	105	112	107	110	112	110	108	104	104

These percentages are based upon the crude rates and reflect therefore not only differences of fertility but also the varying incidence of sex, age, and marital condition in the populations from which they arise. When the latter is eliminated as is attempted in column 6 of Table CI, the standardized percentage ratios become 101·5, 102·0, 95·9 and 102·6 for the North, Midlands, South and Wales respectively, Wales occupying the highest position and the North being placed third out of the four instead of first as suggested by the crude rates. If the areas be examined from the point of view of urbanization the change from the crude to the standardized comparison is even more notable. By the crude rates the position of rural areas is distinctly understated, since from the point of view of fertility alone they are shown to be the most productive of all areas, not only for the country as a whole, but for each of the four geographical sections. Similarly in the urban districts of the South, which yield the lowest rate shown in the table, part of the lowness is due to the unfavourable constitution of the population, for the ratio to the England and Wales rate is raised from 87·4 per cent. to 93·0 per cent. upon standardization. On the other hand the towns of Wales and in a lesser degree London and the county boroughs of the North and Midlands are overfavoured by a comparison limited to the crude ratios alone.

The extent of illegitimacy in different classes of area and parts of the country may be gathered from the lower half of Table CI. Little change of note has occurred in the past year and except for a wider range of variation generally the distribution is not significantly different from that of all births.

The highest rates occur in the rural districts throughout. It will be seen that whereas for all births the rural aggregate rate is 11·0 per cent. above the mean, for illegitimate only it is 24·8 per cent. above. The table confirms generally the view expressed in

earlier reports, when only crude rate comparisons were available that such rates understated the position in rural districts and overstated it in the South.

Sex Proportions at Birth.—Births of males in England and Wales in 1928 numbered 337,182, and those of females 323,085; the proportion of male to female births was 1,044, 1,041, and 1,044 to 1,000 for legitimate, illegitimate, and total births respectively. The corresponding proportions for total births in each year from 1889 onwards and in groups of years since the commencement of registration are shown in Table C (Part II); the extreme range during the preceding 50 years was from 1,032 per 1,000 in 1898 to 1,060 in 1919. During this period the highest ratio recorded prior to the war was 1,042 in 1878. The lowest point touched since 1919 was 1,041 in 1926 since when the figure has risen to 1,044.

The extent to which different classes of area or portions of the country contribute to the preponderance of male births is shown in Table CIII.

Table CIII.—Male Births per 1,000 Female Births, 1928.

———	England and Wales.	North.	Midlands.	South.	Wales.
All Areas	1,044	1,043	1,047	1,041	1,045
London	—	—	—	1,046	—
County Boroughs ..	1,044	1,048	1,038	1,042	1,038
Other Urban Districts	1,038	1,028	1,047	1,032	1,042
Rural Districts ..	1,052	1,051	1,058	1,040	1,055

There is however much variability in the relative incidence of masculinity, and the figures for 1928 afford no reliable guide to the ascertainment of any characteristic differences.

STILLBIRTHS.

The stillbirths registered during 1928 numbered 27,580 in all, 15,099 being males and 12,481 females; the numbers representing 40, 43 and 37 per 1,000 total births or 42, 45 and 39 per 1,000 live births respectively.

Of the above total 13,377 were registered in the second half of the year or 42 per 1,000 live births as compared with 12,586 or 40 per 1,000 live births in the corresponding period of 1927.

Prior to 1st July, 1927, the date on which stillbirth registration became operative in this country under the Births and Deaths Registration Act, 1926, the only record of stillbirths in England and Wales was that obtained from notifications received by Medical Officers of Health. These have been published in the

successive reports, from 1919 onwards, of the Chief Medical Officer to the Ministry of Health and were summarised in last year's Annual Review. They are not repeated as part of a continuous series since it is obvious from an examination of the successive records that the notifications were deficient by a material number of omissions and that they are not properly comparable, therefore, with the statistics which are and will henceforth be available under the 1926 Act.

The constitution of a stillbirth is governed in this country by the definition laid down in the above mentioned Act, which is as follows :—

> " ' Stillborn ' and ' stillbirth ' shall apply to any child which has issued forth from its mother after the twenty-eighth week of pregnancy and which did not at any time after being completely expelled from its mother breathe or show any other signs of life."

The criterion is thus the absence of life at the point of time of complete expulsion and is independent of separation or of viability. The only factor restricting its general application is that of the minimum duration imposed in respect of the period of gestation. In reference thereto it should be noted that the introduction of a time limit, inevitable in the case of a stillbirth, does not affect in any way the existing practice regarding live births ; a child which after complete expulsion shows any signs of life is regarded as a live birth even if the birth occurs before the end of the twenty eight weeks and is registrable as such in accordance with the ordinary procedure.

With regard to the effect of registration upon the statistics, it may be observed that, unlike live-birth registration, where the period between birth and registration is frequently as much as a month or more, stillbirth registration is linked administratively with the burial procedure, and the necessity of early disposing of the body automatically reduces the delay to a minimum and thereby secures a close correspondence between the records and facts in a given period. The record will thus, like that also of infant deaths, be slightly out of phase with the corresponding live-birth record with which each of them is usually compared.

The distribution of the total according to sex, legitimacy and geographical incidence is shown in Table 14a of Part I of the Statistical Review, and is summarised in Rate form in Table CIV ; in the latter have been included columns from which comparisons may be made between the incidence of still-births on the one hand and that of live births or of infant mortality on the other.

This first full year's summary generally confirms the inferences derived from the initial six months' experience reviewed last year. Thus wherever the numbers are large enough to form a satisfactory basis of fact the frequency of stillbirth amongst

Table CIV.—Stillbirths, 1928.

Area.	Stillbirths per 1,000 total births.					Stillbirths per 1,000 total births and Live Births per 1,000 population expressed in relation to corresponding rate for England and Wales taken as 1,000.				Stillbirths per 1,000 total births and Infant Mortality per 1,000 live births expressed in relation to corresponding rate for England and Wales taken as 1,000.		
	Total.	Legitimate.		Illegitimate.		Stillbirths.		Live births.		Still-births.	Deaths under 4 weeks.	Deaths under 1 year.
		Males.	Fem.	Males.	Fem.	Leg	Illegit.	Legit.	Illegit.			
All Areas :—												
England and Wales	40	42	37	61	49	1,000	1,000	1,000	1,000	1,000	1,000	1,000
North	45	47	41	67	53	1,128	1,091	1,044	1,040	1,125	1,136	1,162
Midlands	38	39	34	56	49	949	964	1,013	947	950	967	900
South (inc.London)	34	35	31	54	44	846	891	919	1,027	850	811	876
Wales	52	54	48	76	55	1,308	1,200	1,038	1,000	1,300	1,165	1,114
London	32	33	30	50	51	795	909	963	1,080	800	791	1,036
County Boroughs :—												
England and Wales	42	44	38	63	48	1,051	1,000	1,044	1,027	1,050	1,070	1,144
North	44	47	40	66	52	1,103	1,073	1,069	1,080	1,100	1,155	1,270
Midlands	39	41	36	58	40	974	891	1,044	920	975	989	1,019
South	35	36	33	51	37	897	800	906	1,107	875	839	858
Wales	51	56	44	85	86	1,282	1,545	1,069	760	1,275	1,131	1,120
Other Urban Districts :—												
England and Wales	42	44	38	67	54	1,051	1,109	969	907	1,050	1,004	929
North	48	50	44	74	58	1,205	1,200	994	907	1,200	1,115	1,054
Midlands	37	38	34	60	56	923	1,055	988	880	925	936	856
South	35	37	32	57	44	872	909	869	933	875	846	743
Wales	54	55	51	91	54	1,359	1,345	1,050	933	1,350	1,193	1,147
Rural Districts :—												
England and Wales	38	41	34	54	45	974	909	994	1,093	950	985	853
North	39	43	34	55	47	1,000	927	1,063	1,147	975	1,108	983
Midlands	37	39	34	49	50	923	891	1,006	1,080	925	985	814
South	34	37	30	62	35	872	891	906	987	850	793	700
Wales	49	51	46	54	44	1,256	891	1,000	1,280	1,225	1,144	1,055

males is shown to be definitely greater than it is amongst females. The male excess is rather less than that of last year but it is maintained with considerable uniformity throughout the several sections distinguished. Similarly, as between legitimate and illegitimate births, the latter regularly exhibits the higher rates, the amount of the excess being on a somewhat larger scale than that indicated in the comparison between the sexes.

As regards areal comparison, Wales appears to return the highest frequencies ; taken as a whole or by various degrees of urbanization, the rates are definitely higher than their counterparts in any of the English sections. Amongst the latter, the frequencies decrease progressively from the North, where the rate is about 12½ per cent. in excess of the general average, to the South where it is 15 per cent. below. The rates tend on the whole to increase with urbanization but in this the progressions are not so uniform, the outstanding exception being the case of London which returns almost the lowest rate in the list.

The relative positions in the various portions of the country and the close association in this respect between stillbirths and infantile deaths are brought out in the columns of the table in which the stillbirth rate and infantile mortality rate of the year are expressed in relation to that of the country at large, the latter being taken as 1,000 in each case. The similarity of incidence is marked in comparisons made with the mortality of the full

first year of life, but the parallelism is found to be even closer when the comparison is restricted to the deaths occurring within the four weeks immediately following birth.

Some idea of the local variation of stillbirths may be obtained from the following table which shows the Boroughs and the county urban and rural aggregates exhibiting the highest and lowest rates per 1,000 total births in 1928. Areas in which less than 20 still births were registered have been omitted.

Metropolitan Boroughs.		County Boroughs.		Urban Aggregates (Excluding C.Bs.)		Rural Aggregates.	
		Highest.					
Holborn	44	Dewsbury ..	77	Anglesey ..	79	Brecknock ..	63
Stoke Newington ..	40	Merthyr Tydfil ..	63	Brecknock ..	60	Denbigh	55
Kensington ..	39	Gloucester ..	62	Glamorgan ..	56	Montgomery ..	52
Westminster ..	38	Oldham	61	Denbigh	56	Glamorgan ..	50
Wandsworth ..	37	Bury	58	Caernarvon ..	55	Salop	50
		Lowest.					
Finsbury	28	Southend-on-Sea	30	Kent	33	Sussex East ..	29
Greenwich	28	Bournemouth ..	30	Somerset ..	33	Middlesex ..	28
Lambeth	28	Southampton ..	29	Buckingham ..	33	Lincolnshire, Kesteven.	27
St. Marylebone ..	27	Burton uponTrent	28	Dorset	31	Yorkshire, East Riding	25
Bethnal Green ..	26	Doncaster ..	27	Essex	31	Sussex West ..	23
					31		

NATURAL INCREASE.

In 1928 the excess of live births over deaths registered in England and Wales was 199,878, as compared with 169,563 in 1927, 240,759 in 1926 and 237,741 in 1925. The rise in the natural increase figure, which is in contrast to the falls recently recorded, has been occasioned mainly by the fall in the death rate during a period in which the hitherto regular fall in the birth rate has been temporarily interrupted and is within the scale of annual fluctuation which must be expected in a function representing the difference between two sets of primary observations.

From the comparable series of rates per 1,000 living population given in Table CV it will be observed that, though there is rather greater irregularity in the successive rates of natural increase, they have, over the whole range of years there given, followed on the whole a similar course to those followed by both birth and death-rates, and have declined with advancing years. The present rate of natural increase, 4·3 per 1,000 population last year and 5·0 this, is lower than that of any earlier recorded periods (outside the war years), and compares with a figure of approximately 10 per 1,000 in the years immediately preceding the war and over 14 per 1,000 in the period 1876–1880 when the birth-rate was at about its maximum. Stated in these terms the curve of natural increase expresses no more than that the crude birth-rate has hitherto been greater than the crude death-rate and that the decline in the former has advanced at a greater rate than the fall in the latter. From the general continuity of the series it may be inferred that, even if the fall in the birth-rate continues, the

number of births will continue to exceed the deaths for a number of years to come, and that apart from the results of migration, the population will continue to increase, though, naturally, at a somewhat slower pace.

Table CV.—England and Wales. Natural Increase of Population per 1,000 living, 1876-1928.

———	Mean Annual Live Birth-rate per 1,000 living.	Mean Annual Death-rate per 1,000 living.	Mean Annual Rate of Increase by excess of Births over Deaths per 1,000 living.
1876—1880.. ..	35·3	20·8	14·5
1881—1885.. ..	33·5	19·4	14·1
1886—1890.. ..	31·4	18·9	12·5
1891—1895.. ..	30·5	18·7	11·8
1896—1900.. ..	29·3	17·7	11·6
1901—1905.. ..	28·2	16·0	12·2
1906—1910.. ..	26·3	14·7	11·6
1911—1915.. ..	23·6	14·3*	9·3
1916—1920.. ..	20·1	14·4*	5·7
1921—1925.. ..	19·9	12·2	7·7
1907..	26·5	15·1	11·4
1908..	26·7	14·8	11·9
1909..	25·8	14·6	11·2
1910..	25·1	13·5	11·6
1911..	24·4	14·6	9·8
1912..	24·0	13·4	10·6
1913..	24·1	13·8	10·3
1914..	23·8	14·0	9·8
1915..	21·8	15·7*	6·1
1916..	21·0	14·3*	6·7
1917..	17·8	14·2*	3·6
1918..	17·7	17·3*	0·4
1919..	18·5	14·0*	4·5
1920..	25·5	12·4*	13·1
1921..	22·4	12·1	10·3
1922..	20·4	12·8	7·6
1923..	19·7	11·6	8·1
1924..	18·8	12·2	6·6
1925..	18·3	12·2	6·1
1926..	17·8	11·6	6·2
1927..	16·6	12·3	4·3
1928...	16·7	11·7	5.0

* For the years 1915 to 1920 inclusive the figures upon which these rates are based relate to civilians only.

What must not be inferred from mere excesses of births over deaths or from their alternative expressions as rates per 1,000 total population is that the perpetuation of current conditions regarding fertility and mortality would be sufficient to ensure a continuous increase in the national population, both now and in the remote future.

The population as a whole is gradually getting older and must continue to do so for many years to come owing to the heavy falls which have occurred in both fertility and mortality during the past half century. The older sections where the death frequencies are naturally highest are becoming relatively more and more numerous, and the crude death-rate (deaths per 1,000 population) must in consequence tend to rise in relation to the true underlying mortality and will thus encroach on the already much diminished margin of natural increase recorded above for recent years. The encroachment would be delayed by a real decrease in mortality or an increase in fertility. But of the proximity of the latter there is no real evidence at all ; while as regards the former, from the very nature of the case, the lower mortality falls the less room is there for it to fall further and any practicable assistance from this source is therefore being gradually exhausted as the years go by. Moreover any change in the death rate can have but a temporary effect on a situation which is primarily governed by the rate at which the population is being replenished at its source.

It was suggested in the 1926 Review that if we take as the standard of population stability, not the maintenance of a constant total but the production of a standard number of births, the standard being that number which would in their turn and at the rate they themselves were born produce offspring numerically equal to themselves, the standard would correspond to a crude birth rate based on the present population of about 19½ per 1,000. This level has not been reached since 1923—the rate for the present year is only 86 per cent. of the said standard—and the inevitable inference must be drawn that, while there is no improvement, the future growth of population will tend to be at an ever diminishing rate up to the stage at which births and deaths are equal, the latter thereafter gaining the ascendancy with a consequent decline in population.

Table CVI shows for 1928 the rate of natural increase in various sections of the country, representing the combined effect of the several sectional birth and death-rates.

Table CVI.—Natural Increase per 1,000 living, 1928.

——	England and Wales.	North.	Midlands.	South.	Wales.
All Areas	5·0	5·2	6·0	3·7	5·5
London	—	—	—	4·1	—
County Boroughs ..	5·2	5·0	6·2	3·1	6·0
Other Urban Districts	4·9	4·6	6·0	3·0	5·7
Rural Districts ..	5·4	6·9	5·7	4·0	4·7

GREAT BRITAIN AND IRELAND.

Population.—The first complete census of the United Kingdom was taken in 1821, when the population numbered 20,893,584 persons; during the 100 years 1821–1921 this number has increased by about 126 per cent., the sum of the final census figures for Great Britain and of the estimated population of Ireland in June, 1921, amounting to 47,263,196. The populations of the several portions of the United Kingdom for each census year from 1821 and for individual years from 1888 are set out in Table A.

Table CVII.—Great Britain and Ireland. Vital Statistics 1918–1927 and 1928.

——	Great Britain and Ireland.	England and Wales.	Scotland.	Northern Ireland.	Irish Free State.
Estimated Population in the middle of the year 1928 *(in thousands).*					
Males	23,345	18,896	2,349	604	1,496
Females	25,229	20,586	2,544	646	1,453
Persons	48,574	39,482	4,893	1,250	2,949
Marriages.					
1928	357,165	303,228	32,957	7,264	13,716
Persons married per 1,000 living :—					
1918–1927 ..	15·7	16·4	14·9	12·9	9·9
1928	14·7	15·4	13·5	11·6	9·3
Births.					
1928	842,228	660,267	96,822	25,963	59,176
Per 1,000 living :—					
1918–1927 ..	20·0	19·3	22·6	22·9	20·4
1928	17·3	16·7	19·8	20·8	20·1
Deaths.					
1928	585,456	460,389	65,271	18,004	41,792
Per 1,000 living :—					
1918–1927 ..	13·3	12·9*	14·2	16·3	15·2
1928	12·1	11·7	13·3	14·4	14·2
Deaths of Infants under 1 *year.*					
1928	57,297	42,960	8,299	2,022	4,016
Per 1,000 births :—					
1918–1927 ..	80	79	93	86	74
1928	68	65	86	78	68

* For the years 1918–1920 inclusive the figures on which this rate is based relate to civilians only.

Marriages.—The marriages during the year 1928 numbered 357,165, corresponding to a rate of 14·7 persons married per 1,000 of the total population. This rate was 0·2 below the corresponding rate in 1927, and 1·0 per 1,000 below the average rate in the ten years 1918–1927.

Births.—The births registered in the year 1928 numbered 842,228, and were in the proportion of 17·3 per 1,000 of the total population. This rate was the same as the corresponding rate in 1927, and 2·7 per 1,000 below the average in the ten years 1918–1927.

Deaths.—The deaths registered in the year 1928 numbered 585,456, and were in the proportion of 12·1 per 1,000 of the total population. This rate was 0·6 per 1,000 below the corresponding rate in 1927, and 1·2 per 1,000 below the average in the ten years 1918–1927.

Infant Mortality.—The deaths of infants under one year of age during the year 1928 numbered 57,297, representing a rate of 68 per 1,000 live births. This rate was 4 per 1,000 live births below that recorded in 1927 and 12 per 1,000 below the average in the ten years 1918–1927.

BIRTHS AND DEATHS AT SEA.

Marine Register Book.—In accordance with the Births and Deaths Registration Act of 1874 and the Merchant Shipping Act of 1894, Commanding Officers of ships trading to or from British ports are required to transmit returns of all births and deaths occurring on board their ships to the Registrar-General of Shipping and Seamen, who furnishes certified copies of such returns to the Registrars-General of Births and Deaths for England, Scotland, Northern Ireland and the Irish Free State. Similar returns are furnished to the Registrars-General of Births and Deaths by Officers in command of His Majesty's ships. These returns of births and deaths at sea constitute the "Marine Register Book." During the year 1928 this register was increased by the addition of 173 entries of birth and 2,148 entries of death.

REGISTRATION OF BIRTHS, DEATHS AND MARRIAGES.

Progress of Registration.—The names in the alphabetical indexes of births, deaths and marriages recorded in the national registers of England and Wales were increased during the year 1928 by 1,727,112, this addition raising the total of names in the indexes, which at the end of 1928 embraced a period of 91½ years, to 154,411,687 (Table S).

Searches and Certificates.—Besides the certified copies of the registered births, deaths and marriages kept in England and Wales pursuant to the Registration Acts, a large number of other registers and records are deposited in this Office under statute or other arrangement. A revised list of these various registers and records will be found on pages 149–155 of the Review (Text) for 1925. Searches may be made in any of these registers, and certificates obtained on payment of the prescribed fees.

Table CVIII, affords an indication of the extent to which the copies of the records kept in this Office have been utilized by the public for legal evidence of births, deaths and marriages since 1866.

Table CVIII.

Years.	Total Searches.	Gratuitous Searches.	Searches paid for by Fees.	Certificates Issued.	Amount Received.		
					£	s.	d.
1866 (52 weeks)	12,135	—	12,135	10,017	1,860	15	6
1875 (52 weeks)	26,356	—	26,356	20,282	3,879	15	6
1885 (52 weeks)	36,450	—	36,450	27,682	5,317	13	6
1895 (52 weeks)	53,289	—	53,289	35,727	7,200	12	6
1905 (52 weeks)	65,142	—	65,142	50,310	9,611	9	0
1906 (52 weeks)	64,340	—	64,340	49,429	9,458	6	0
1907 (52 weeks)	69,249	—	69,249	53,058	10,194	9	0
1908 (53 weeks)	72,370	—	72,370	54,870	10,550	8	0
1909 (52 weeks)	132,169	58,626*	73,543	54,674	10,568	8	0
1910 (52 weeks)	126,716	51,347	75,369	57,019	10,939	5	6
1911 (52 weeks)	140,496	65,491	75,005	56,347	10,875	6	0
1912 (52 weeks)	149,752	69,151	80,601	61,143	11,752	6	0
1913 (52 weeks)	150,540	71,225†	79,315	60,356	11,613	19	0
1914 (53 weeks)	188,040	104,593	83,447	65,817	12,482	11	6
1915 (52 weeks)	202,939	118,788	84,151	69,746	13,007	10	0
1916 (52 weeks)	303,334	197,669	105,665	88,265	16,379	17	0
1917 (52 weeks)	272,199	177,403	94,796	80,374	14,859	14	0
1918 (52 weeks)	255,462	146,504	108,958	90,898	16,889	0	0
1919 (52 weeks)	301,913	170,670	131,243	107,067	20,017	14	6
1920 (53 weeks)	284,194	149,447	134,747	108,684	20,415	0	0
1921 (52 weeks)	258,461	131,167	127,294	99,911	18,949	10	6
1922 (52 weeks)	263,047	143,088	119,959	90,400	19,028	12	6
1923 (52 weeks)	269,822	144,118	125,704	93,701	20,875	16	0
1924 (52 weeks)	337,521	178,990	158,531	121,890	27,109	15	0
1925 (53 weeks)	488,781	339,790	148,991	115,378	25,610	2	6
1926 (52 weeks)	541,916	407,687	134,229	105,560	23,305	6	6
1927 (52 weeks)	1,002,345	854,084	148,261	115,009	25,733	16	0
1928 (52 weeks)	600,679	452,953	147,726	114,731	25,678	17	0

* Including some searches made in 1908.

† In addition, there were 91,917 gratuitous searches made for National Insurance Audit purposes.

The 452,953 gratuitous searches during 1928 comprise 66,987 searches made for the purpose of verifying the ages of persons aged 70 and upwards claiming old age (non-contributory) pensions and 261,130 for persons aged 65 and 69 claiming pensions under

the Old Age Contributory Pensions Act, 1925, 63,865 for verification purposes in connexion with claims to widows' and orphans' pensions under the Widows', Orphans', etc., Act, 1925, 32,284 to assist dependents of men of H.M. Forces to produce evidence of marriage and of the births of children in connexion with claims to naval and military pensions, separation allowances, etc., and to verify the ages of certain classes of youths and men in connexion with service in the Army, Navy, and Air Force, for verification of age, &c., in connexion with National Health Insurance 17,088, and 11,599 for other public purposes.

Offences against the Registration Acts.—In 1928 twelve persons, on prosecution by order of the Registrar-General, were convicted of offences in connexion with registration. The offences for which convictions were obtained were as under :—

(*a*) For failing to register a birth	2
(*b*) Giving false information when registering a birth or death	10

In addition to the above cases proceedings were taken and convictions obtained by the Director of Public Prosecutions in cases reported through the Registrar-General, the offences being those of false registration and making false declarations when giving notice of marriage.

RE-REGISTRATION OF BIRTHS UNDER THE LEGITIMACY ACT, 1926.

Under the Legitimacy Act, 1926, an illegitimate child of parents who married after the birth of the child was, subject to certain conditions, legitimated ; and the Act contained incidental provision to enable the births of such children to be re-registered. During the year 1928, authority was issued for the re-registration of the births of 4,883 children, being 612 less than the preceding year. It would appear that the normal figure to be expected in future years will be approximately 4,000, though it is still difficult to speak with any certainty. A large number of applications are not made shortly after the marriage of the parents but are postponed until the children's birth certificates are required on entering or leaving school or attaining the age of 21.

The number of authorities issued during each quarter is as follows :—

	1927.	1928.
March quarter	1,265	1,401
June quarter	1,256	1,170
September quarter ..	1,381	1,242
December quarter ..	1,593	1,070
Totals	5,495	4,883

ADOPTION OF CHILDREN UNDER THE ADOPTION OF CHILDREN ACT, 1926.

The Adoption of Children Act, 1926, provided for the legal adoption of children by Order of the Court, and established a system of registration of such adoptions in an Adoption Register to be kept by the Registrar-General. The number of children whose adoption was registered during 1928, is 3,303, the following table furnishing an analysis of the Adoption Orders made by reference to the several classes of Courts and the quarterly distribution of the total figure.

Table CIX.

Year.	Number of Adoption Orders dealt with.				Corresponding number of children, *i.e.*, Entries made in Adopted Children Register.				
	Total.	High Court.	County Court.	Court of Summary Jurisdiction.	Year's total.	March Quarter.	June Quarter.	September Quarter.	December Quarter.
1927	2,943	133	184	2,626	2,967	329	990	774	874
1928	3,278	124	236	2,918	3,303	851	844	705	903

PARLIAMENTARY AND LOCAL GOVERNMENT ELECTORS.

In Tables T and U are shown the numbers of males and females on the Register of Electors compiled under the Representation of the People Act, 1918, in respect of the qualifying period of three months* ending on the 1st June, 1928.

The particulars have been taken from statements furnished to the Registrar-General by the Registration Officers of the several areas, or in the case of a University forming the whole or part of a University constituency, by the Chancellor, Registrar or other officer dealing with Parliamentary registration.

The expressions "Parliamentary electors," "Local Government electors," and "persons on absent voters list," have in the tables the same meaning as in the Act. The expression "men registered for business premises qualification," means men who are qualified to be registered as occupiers of business premises and are not resident in the qualifying premises.

* The 6 months qualifying period in the Representation of the People Act, 1918, was reduced to 3 months by the Economy (Miscellaneous Provisions) Act, 1926, with effect from 1927 inclusive.

Registration Officers were instructed that the return of Parliamentary Electors should be the net total of individual Parliamentary Electors in each constituency, all duplicate entries being omitted from the count. In the case of Local Government Electors the number of names on the register was to be given. The instructions further directed that the names of " out voters " (that is, persons whose names appear twice in the Register, by reason of a claim under Rule 24 of the First Schedule to the 1918 Act) should be counted once only in respect of that qualification.

Table T refers to Parliamentary electors, and shows for each Parliamentary constituency in England and Wales, including the University constituencies, the number of males and females on the Register, and also the numbers registered in respect of business premises qualifications and the numbers on the absent voters list.

Table U refers to Local Government electors, and shows the numbers of each sex registered in respect of every sanitary area, i.e., county borough, metropolitan borough, municipal borough, urban district and rural district in England and Wales.

Table CX—England and Wales.—
Parliamentary and Local Government Electors.

Register	Parliamentary Register (including University Constituencies).					Local Government Register.		
	Persons.	Males.	Females.	Men registered for business premises qualification (included in Cols. *b and c*).	Persons on Absent Voters List (included in Cols. *b–d*).	Persons.	Males.	Females.
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*k*
Autmn								
1918	17,222,983	10,281,054	6,941,929	159,013	3,362,028	13,930,130	6,998,665	6,931,465
1919	17,465,638	10,234,887	7,230,751	205,461	1,157,061	14,361,123	7,176,019	7,185,104
1920	17,584,552	10,176,750	7,407,802	203,471	254,866	14,712,453	7,364,912	7,347,541
1921	17,795,784	10,237,344	7,558,440	194,737	185,227	15,019,348	7,527,861	7,491,487
1922	18,001,692	10,312,248	7,689,444	199,904	162,901	15,322,625	7,700,108	7,622,517
1923	18,388,833	10,498,179	7,890,654	208,694	151,953	15,691,962	7,873,461	7,818,501
1924	18,806,842	10,719,922	8,086,920	211,257	165,564	16,015,033	8,007,384	8,007,649
1925	19,167,275	10,897,545	8,269,730	217,509	167,406	16,345,290	8,157,607	8,187,683
1926	19,346,954	10,982,128	8,364,826	206,199	161,460	16,574,549	8,284,181	8,290,368
1927	19,585,972	11,094,031	8,491,941	205,538	155,436	16,865,666	8,444,718	8,420,948
1928	19,866,649	11,226,396	8,640,253	205,793	154,432	17,179,487	8,608,017	8,571,470

The totals of the Autumn 1928 Registers are shown in Table CX in conjunction with the figures of previous Autumn Registers made since the passing of the 1918 Act.

It will be observed that but for a slight decrease in the male Parliamentary electorate in the period 1918–20, which has been explained in earlier issues of the Review, the numbers on both Parliamentary and Local Government Registers have steadily increased since the passing of the 1918 Act. Since 1921, the last Census year, the net additions to the two registers represent

increases of 11·6 and 14·4 per cent. respectively as compared with a total population increase estimated at 4·2 per cent. only, contrasts which illustrate the general ageing of the population produced by the falling birth and death rates discussed on earlier pages.

Including a certain amount of plural representation in the case of those persons registered in more than one constituency by reason of their possessing the necessary residence or business qualification, or being entitled to be registered in respect of a University constituency, the total Parliamentary electorate of 19,866,649 represents 50·3 per cent. of the estimated total population, or 59·4 per cent. of the male and 42·0 per cent. of the female population; in the case of the rather more restricted Local Government franchise, the numbers are somewhat less and the proportions correspondingly lower, the total electorate being 43·5 per cent. of the whole population, or 45·6 per cent., and 41·6 per cent. in the case of males and females separately.

Of the total of the Parliamentary Registers, the bulk, viz., 19,802,602, represents the aggregate voting strength in the 509 geographical constituencies into which England and Wales is divided, the balance of 64,047 representing the five University constituencies. Eleven of the Boroughs, and three University constituencies, however, each return two members, so that the total representation in Parliament is by 528 members, 520 in respect of the geographical divisions, with an average electorate of 38,082 per member and eight in respect of the Universities, with an average electorate of 8,006.

MISCELLANEOUS.

Other tables appearing in Part II. of the Statistical Review which have not formed the subject of special comment in the foregoing pages are as follows :—

Table R, showing the balance inward or outward of passenger movement into and out of the United Kingdom for each of the years from 1909–1928.

Table W, showing the Area, Population, Births and Deaths in British Islands other than Great Britain and Ireland from 1902–1928.

Table X, showing the Population, Births, Deaths, Infant Mortality, Marriages and corresponding rates for the year 1928 in the several portions of the British Dominions :—

The Commonwealth of Australia.
Canada.
New Zealand.
South Africa.

Table Y, showing the 1921 Census Populations, and the intercensal rate of increase or decrease of the several Dominions, Colonies and Protectorates (including mandated territories) in the British Empire.

Table Z, showing the latest Census Populations and intercensal rates of increase or decrease in various Foreign Countries.

Table AA, showing the changes which have taken place in the boundaries of Administrative and Poor Law Areas in England and Wales during 1928.

Table BB, showing the changes which have taken place in the boundaries of Administrative Areas in England and Wales during 1928, with enumerated population by sex and age (1921) of the transferred areas.

METEOROLOGICAL REMARKS.

The Weather during the Year 1928.

The year 1928 will be chiefly remembered for the dry, warm and sunny periods experienced in central and eastern England in July and August and in most districts in September. Mean temperatures for the year were above the normal. Sunshine aggregates exceeded the normal in the eastern districts and were below the normal in the western districts. Over the country as a whole, there was a moderate excess of rainfall. Deficiencies were confined almost entirely to places in the east of England while the western districts generally had an excess amounting to about 50 per cent. in the Lake District where locally 1928 was the wettest year in 60 years of comparable data.

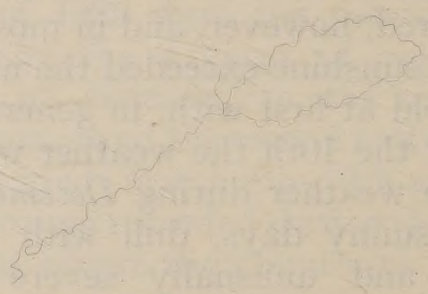
Other notable features of 1928 were the persistent wetness of January and October and the dryness of September, the disastrous floods in London on January 7th, the severe gales in January,the first half of February and the second half of November, the severe frosts during the periods March 8th–13th and December 14th–16th, the high temperatures recorded during July in central and eastern England and the severe thunderstorms in August.

January was mild, stormy and decidedly wet, monthly totals exceeding twice the normal over the greater part of Great Britain. Although rain fell frequently, sunshine was recorded on most days and as a result, monthly aggregates were above the normal. Shortly after midnight on January 7th, an abnormal rise of the Thames occurred, the tidal reaches of the river attaining their highest level for at least 50 years. In the flooding which affected low lying areas in Southwark, Westminster and as far west as Putney and Hammersmith, fourteen people lost their lives through being trapped in basements. Much material damage was done by the floods. *February* was mild with frequent rain and floods and severe gales on 10th–11th. There was, however, an excess of sunshine, the second half of the month being relatively dry and sunny with frequent severe frosts. *March* was wet and on the whole mild with bright periods, but from the 8th to the 13th cold easterly winds and wintry weather was experienced over the whole country. The weather during *April* was on the whole changeable and showery with considerable fair periods.

Warm sunny weather occurred between the 4th and 10th and around the 26th, when temperatures exceeded 70° F. locally in England. During an intervening spell of wintry weather from the 14th to the 21st, severe frost and snow, sleet or hail occurred in most districts. *May* was dry. Warm sunny weather prevailed generally during the first week and at the end of the month, with cold northerly winds from the 7th to the 22nd and much cloud in the eastern and central districts of Great Britain from the 11th to the 23rd. *June* was unsettled, dull, cool and wet, heavy rain occurring from the 6th to the 10th and about the 13th and 28th. During the first four days however daily amounts of sunshine exceeding 15 hours were recorded in many places. Most districts reported thunderstorms. Although wet and cool at the beginning and end of the month, *July* was on the whole, mainly dry, and in most English districts warm and sunny, especially in eastern and central England. *August* was mainly fair, sunny and rather dry in the south-east of the British Isles and unsettled with much rain, but considerable fair periods, elsewhere. Thunderstorms occurred frequently. Anti-cyclonic conditions prevailed frequently during *September*, and in consequence mainly fair dry weather prevailed generally, sunshine aggregates being above the normal in all districts. There was a pronounced deficiency of rainfall. Apart from rather cold weather at the beginning and end of the month and about the 11th, 13th and 22nd, *October* was mild, and, except in some extreme northern and eastern districts, wet. Considerable bright periods occurred, however, and in most parts of England monthly aggregates of sunshine exceeded the normal. *November* was quiet and rather cold at first with, in general, occasional slight precipitation ; after the 10th the weather was unusually mild, wet and stormy. The weather during *December* was variable and, apart from a few sunny days, dull with considerable fluctuation in temperature and unusually severe frost on the 9th, 14th, 15th and at the end of the month. Although there was frequent precipitation, particularly during the last week, monthly totals were mostly below the normal except in the east and south-east of England where there was an excess.

Further information.—Tables relating to meteorological elements are given in Part I (Tables 29–31). A description of the weather of each month appears in the Quarterly Return of the Registrar-General and a summary of the observations at Greenwich for each month of the year appears in Table XIV of the Return for the fourth quarter.

Charts showing the distribution of pressure, temperature, sunshine and rainfall for the year, together with summaries of the observations at numerous stations will be found in the Annual Summary of the Monthly Weather Report issued by the Meteorological Office.

A list of the publications of the Meteorological Office will be found in "List M" issued by H.M. Stationery Office.

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